



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 13 2014

REPLY TO THE ATTENTION OF:

CERTIFIED MAIL 7009 1680 0000 7663 6476
RETURN RECEIPT REQUESTED

Mr. Craig G. Hogarth
Director of Safety & Compliance
Heritage Environmental Services, LLC
7901 West Morris Street
Indianapolis, Indiana 46231

Re: Notice of Violation
Heritage Environmental Services
EPA I.D.: IND 093 219 012

Dear Mr. Hogarth:

From July 17, 2012 through July 26, 2012, representatives of the U.S. Environmental Protection Agency and the National Enforcement Investigations Center (NEIC) inspected Heritage Environmental Services, LLC (Heritage), located at 7901 West Morris Street, Indianapolis, Indiana and the Heritage Roachdale Landfill (Heritage Roachdale), located at 4370 West CR1275N, Roachdale, Indiana.

A sampling event was also conducted at Heritage Roachdale. The purpose of the inspection was to evaluate Heritage's compliance with certain provisions of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 *et seq.*, and its implementing regulations related to the generation, treatment and storage of hazardous waste. A copy of NEIC's inspection report is enclosed, for your reference. Based on the information provided by Heritage personnel, review of records, sampling results and physical observations made by the inspector at the time of the investigation, the EPA has determined that Heritage is in violation of its hazardous waste storage permit for the Heritage Environmental Services, LLC, Indianapolis, Indiana, IND093219012 ("Permit"); and in violation of the Indiana Administrative Code (IAC), and the United States Code of Federal Regulations (CFR). Specifically, we find that Heritage is in violation of the following requirements:

Land Disposal Restrictions

Failure to Meet LDR Requirements

1. The Permit requires that Heritage, the Permittee, shall comply with all applicable self-implementing requirements of 40 CFR Part 268 and all applicable land disposal requirements which become effective by federal statute. *See*, Facility Permit, Section II,

General Facility Conditions, item Q. A prohibited waste identified in the table "Treatment Standards for Hazardous Wastes" may be land disposed only if it meets the requirements found in the table. All hazardous constituents in the waste or in the treatment residue must be at or below the values found in the table for that waste ("total waste standards"); or the hazardous constituents in the extract of the waste or in the extract of the treatment residue must be at or below the values found in the table ("waste extract standards"). *See*, 40 CFR § 268.40(a)(1) and (a)(2), Land Disposal Restriction Requirements, Applicability of Treatment Standards.

2. At the time of the inspection, two batches of hazardous waste were treated at Heritage in Indianapolis. Heritage disposed of both these loads in the Heritage Roachdale Landfill, a RCRA Subtitle C hazardous waste landfill, located in Roachdale, Indiana.
3. NEIC sampled both treated loads after they were placed in the active face of the landfill. Ten samples were collected from the treatment group 9000-431 batch and ten samples were collected from the treatment group 9000-236 batch.
4. All ten grab samples collected from the 9000-431 batch exceeded the land disposal restriction (LDR) treatment standard for lead. Four out of ten samples collected from the 9000-236 batch exceeded the LDR treatment standard for zinc, and one of the samples exceeded the LDR treatment standard for nickel.
5. Heritage failed to keep all hazardous constituents in the extract of its treated waste or in the extract of the treatment residue at or below the values found in the table ("waste extract standards"). Therefore, Heritage violated the above-referenced LDR requirement of the Permit and 40 CFR § 268.40(a)(2), by land disposing hazardous waste that did not meet the requirements found in the table.

Testing Requirements

Failure to Test Waste According to Frequency Specified

6. The Permit requires that Heritage, the Permittee, shall comply with all testing, tracking and recordkeeping requirements for treatment facilities described in 40 CFR § 268.7. *See*, Facility Permit, Section II. General Facility Conditions, item Q. Treatment facilities must test their wastes according to the frequency specified in their waste analysis plans (WAPs) as required by 40 CFR § 264.13 (for permitted TSDs). *See*, 40 CFR § 268.7(b).
7. Treatment Facility WAP Condition 9.4 LDR Stabilization and Verification Sampling and Analysis states, Heritage will sample and analyze wastestreams generated from each stabilization/LDR treatment process (characteristic and/or listed) prior to disposal on a weight basis to verify compliance with the applicable Land Disposal Restrictions treatment standards. The wastestream from each stabilization/LDR treatment process will be sampled on a quarterly basis for a maximum of four sampling events per calendar year.

8. At the time of the inspection, Heritage was conducting monthly post-treatment verification sampling and analysis of wastestreams generated from only two of their stabilization/LDR treatment processes (treatment groups 9000-236 and 9000-431). However, Heritage never conducted this verification sampling and analysis on some wastestreams or on certain combinations of wastestreams.
9. Therefore, Heritage violated the above-referenced requirement of the Permit and the above-referenced regulation, 40 CFR § 268.7(b), by not testing all of their wastestreams as required by their permit and not testing them according to the frequency specified in their WAP.

Failure to Obtain a Detailed Chemical and Physical Analysis

10. Before an owner or operator treats, stores, or disposes of any hazardous wastes, or nonhazardous wastes if applicable under 40 CFR §264.113(d), he must obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this part and part 268 of this chapter. *See*, 40 CFR § 264.13(a)(1) [Facility Permit, Section II. General Facility Conditions, item C, General Waste Analysis].
11. At the time of the inspection, Heritage was conducting monthly post-treatment verification sampling and analysis of wastestreams generated from only two of their stabilization/LDR treatment processes (treatment groups 9000-236 and 9000-431). However, Heritage never conducted this verification sampling and analysis on some wastestreams or on certain combinations of wastestreams.
12. For example, on April 13, 2012, Heritage treated a batch of waste, which included: 1) hazardous slag, with waste numbers K061, D006 and D008; 2) a mercury-contaminated glass, with a waste number of D009, from Heritage; and, 3) wastewater treatment filter cake from Heritage. The hazardous slag and the mercury-contaminated glass were not included in the post-treatment verification sampling and analysis.
13. Heritage also used a post-treatment verification sampling and analysis program based on the assumption that wastestreams treated to meet LDR treatment standards were always consistent and mixed in the same ratios. This approach did not account for batches that included drummed waste and generator's wastestreams that are treated in limited amounts. These types of wastestreams were diluted by large volumes of wastes during the dose response testing.

14. The stabilization reagent formulation, that the treatability testing showed met LDR treatment standards for the dose response sample, then was used the following month to treat all wastes.
15. Heritage had records of treatment batches which had constituents in different concentrations than wastestreams actually tested. These records also included constituents that had not been present in the verification sampling and analysis events.
16. Therefore, Heritage violated the above-referenced testing requirement of the Permit, Facility Permit, Section II. General Facility Conditions, item C, and the above-referenced regulation, 40 CFR § 264.13(a)(1), by not obtaining a detailed chemical and physical analysis of a representative sample of the wastes.

Dilution Prohibition Requirement

Diluting a Restricted Waste as a Substitute for Adequate Treatment

17. The Permit requires that Heritage, the Permittee, shall comply with the dilution prohibition requirements described in 40 CFR § 268.3. *See*, Facility Permit, Section II. General Facility Conditions, item Q. Except as provided in paragraph (b) of this section, no generator, transporter, handler, or owner or operator of a treatment, storage, or disposal facility shall in any way dilute a restricted waste or the residual from treatment of a restricted waste as a substitute for adequate treatment to achieve compliance with subpart D of this part, to circumvent the effective date of a prohibition in subpart C of this part, to otherwise avoid a prohibition in subpart C of this part or to circumvent a land disposal prohibition imposed by RCRA section 3004. *See*, 40 CFR § 268.3(a).
18. Heritage conducted treatability testing on the dose response sample. The stabilization reagent formulation, that the treatability testing showed met LDR treatment standards for the sample, then was used the following month to treat all wastes. Basing the stabilization reagent formulation on a sample representing an entire month's ratio of wastestreams, instead of a specific treatment batch, can result in some wastestreams not being effectively stabilized.
19. For example, five wastestreams account for more than 60 percent of the volume of wastes received. Heritage treats two wastestreams that are characteristic for mercury, waste number D009. The generators of these wastestreams only account for 0.00032 percent of the wastes received. The dose-response testing does not ensure that D009-characteristic wastes are stabilized to meet the LDR treatment standard, instead of being diluted by other wastes.
20. Therefore, Heritage violated the above-referenced testing requirement of the Permit and the above-referenced regulation, 40 CFR § 268.3(a), by diluting a restricted waste as a substitute for adequate treatment to circumvent a land disposal prohibition.

Analytical Requirements

Failure to Follow Quality Assurance Method

21. The Permit requires that Heritage, the Permittee, follow the Acceptable Analytical Methods, located in Appendix A of the WAP. The WAP also specifies the use of EPA SW-846 Method 1311 (Toxicity Characteristic Leaching Procedure, TCLP). *See*, Facility Permit, Appendix A.
22. Heritage's WAP specifies the use of ASTM D 5839-96 (Reapproved 2006) for the analysis of chlorine (percent) and halogens, total (TX). Section 13 of this method specifies the following quality control steps:
 - a. Process a minimum of one quality control check standard, matrix spike/matrix spike duplicate and one analytical blank consisting of graphite powder/analyte-free paraffinic oil blend with each batch of LHWF samples.
 - b. Evaluate a quality control sample with each batch of analyzed samples. These results will verify that user defined data quality objectives have been met.
23. At the time of the inspection, the Heritage on-site laboratory was using X-ray fluorescence (XRF) to measure the concentrations of certain regulated constituents, such as chlorine in incoming waste and mercury in liquids from the mercury treatment process. (Chlorine is used to screen for PCBs at concentrations of greater than 50 ppm, and mercury is measured to verify that its concentration is less than 100ppm.) Heritage was only calibrating the XRF instrument one time per year. In addition, a quality control standard was not analyzed with each batch of samples to verify instrument performance.
24. Therefore, Heritage was not following the method to ensure quality assurance, which the WAP requires, under Facility Permit, Appendix A, by not processing a minimum of one quality control check standard and by not evaluating a quality control sample with each batch of analyzed samples.

Failure to Determine the Proper Extraction Fluid

25. The Heritage on-site laboratory performed TCLP analysis on sales pre-approval samples. The results of this analysis were used to determine if a given treatment recipe can be used for candidate wastes. Section 7.1.4 of EPA's SW-846 Method 1311 specifies that a pre-test be conducted to determine the extraction fluid to use to extract the waste.
26. At the time of the inspection, Heritage's on-site laboratory was not conducting the pre-test required to determine the proper extraction fluid for the TCLP analysis.

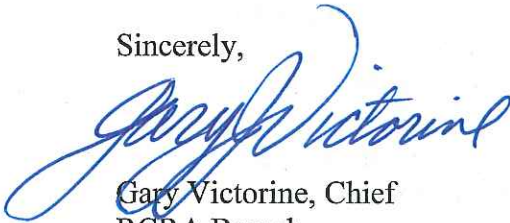
27. The on-site laboratory did not conduct this fluid determination pre test step, therefore Heritage violated the above-reference WAP requirement of the Permit, under Facility Permit, Appendix A.

Heritage has been determined to be a significant non-complier. Under Section 3008(a) of RCRA, 42 U.S.C. § 6928(a), EPA may issue an order assessing a civil penalty for any past or current violations and requiring compliance immediately or within a specified time period.

Although this letter is not such an order, we request that you submit a response in writing to this office no later than thirty (30) days after receipt of this letter documenting the actions, if any, which you have taken since the inspection to establish compliance with the above requirements. You should submit your response to Jamie L. Paulin, U.S. Environmental Protection Agency, Region 5 (LR-8J), 77 West Jackson Boulevard, Chicago, Illinois 60604.

If you have any questions regarding this letter, please contact Ms. Paulin of my staff at (312) 886-1771.

Sincerely,



Gary Victorine, Chief
RCRA Branch

Enclosure

cc: Nancy Johnston, Indiana Department of Environmental Management
(njohnsto@idem.in.gov)



United States Environmental Protection Agency
Office of Enforcement and Compliance Assurance
Office of Criminal Enforcement, Forensics and Training

ENFORCEMENT CONFIDENTIAL

NEICVP0986E02

**RESOURCE CONSERVATION AND RECOVERY ACT
COMPLIANCE REPORT**

Heritage Environmental Services, LLC

7901 W. Morris St.

Indianapolis, Indiana 46231

NEIC Project No.: VP0986

April 2013

Project Manager:

A handwritten signature in blue ink that reads "Jackie Vega".

Jackie Vega, Environmental Engineer

Other Contributors:

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Prepared for:

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Authorized for Release by:

A handwritten signature in blue ink that reads "Suzanne Schulman".

Suzanne Schulman, Civil Services Section Chief

NATIONAL ENFORCEMENT INVESTIGATIONS CENTER

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NEIC

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INTRODUCTION

At the request of U.S. Environmental Protection Agency Region 5, the EPA National Enforcement Investigation Center (NEIC) conducted a Resource Conservation and Recovery Act (RCRA) compliance investigation of Heritage Environmental Services, LLC at 7901 W. Morris Street, Indianapolis, Indiana (Heritage Treatment Facility) and at Heritage Environmental Services, LLC – Roachdale Landfill (Heritage Roachdale Landfill) at 4370 W. CR1275N, Roachdale, Indiana. The Indianapolis facility treats and stores hazardous waste, and the Roachdale facility operates as a RCRA Subtitle C hazardous waste disposal landfill. Because most of the management and compliance personnel for the two facilities are the same, the term Heritage is used in this report to represent the combined sites, especially in the process description.

This report presents NEIC's field observations during and following the on-site inspection of the Heritage Treatment Facility and the Heritage Roachdale Landfill from July 17 through 26, 2012, and the results of NEIC laboratory analyses of samples collected during the on-site inspection. The information presented in this report was collected from background documentation, personnel interviews, direct observation, company-provided documentation, and state and federal government databases. With the participation of EPA Region 5, NEIC conducted the RCRA inspection of the Heritage facilities with the following objectives:

- Conduct a RCRA on-site inspection of the Heritage Treatment Facility and the Heritage Roachdale Landfill, specifically focusing on the 'facilities' waste acceptance, storage, treatment, disposal, and/or off-site shipment procedures.
- Collect samples of stabilized/solidified waste certified for disposal to determine compliance with land disposal restriction (LDR) treatment standards.
- Analyze collected samples at the NEIC laboratory in Denver, Colorado.
- Evaluate all information obtained to determine compliance with applicable RCRA regulations and permits.

FACILITY BACKGROUND

The Heritage Treatment Facility is a RCRA-permitted commercial industrial waste treatment and recycling facility (EPA identification No. IND093219012). The facility treats both hazardous and non-hazardous wastes. Hazardous waste activities include supplemental fuel blending and storage of organic materials for use as fuel at cement kilns or industrial boilers; treatment of liquid hazardous wastes in tanks; treatment and stabilization of acid- and metal-bearing sludges; treatment of cyanide-bearing wastes; storage of hazardous waste in tanks and containers; management of lab pack wastes; mercury recovery; and occasional pilot studies for reclamation of various materials. According to the March 30, 2012, Indiana State Department of

Environmental Management (IDEM) inspection report, Heritage was issued a new permit in 2007, and the facility has appealed a few items. The permit lists the following units:

- Tanks 9 through 20, 23 through 26, 33 through 36, 41, 49, 50, 73, A, B, C, D, E1, E2, E3, F, G, H, I, U, and W
- Cyanide destruction unit
- Carbon adsorption unit;
- Container storage units 1 through 8;
- Containment building west (CBW)
- Containment building rail(CBR)
- Six filter presses

Heritage is a large quantity generator of hazardous waste; the primary waste stabilized is filter cake.

Heritage Roachdale Landfill is a RCRA-permitted disposal facility (EPA Identification No. IND980503890). The effective permit was issued on July 14, 2009, and had a Class 3 permit modification on December 15, 2010, which added an additional cell to unit 2. According to the April 18, 2011, IDEM inspection report, the active portion of the landfill is unit 2, cells 1 and 2. Closure activity is complete on unit 1. Normally, the landfill operates 5 days a week, receiving 50 to 60 loads a day. The leachate from cell 1 in unit 2 contains p-cresol, which is treated by pH adjustment, bacterial treatment, and aeration. The treated leachate is shipped to the Heritage Treatment Facility for discharge.

INVESTIGATION METHODS

NEIC performed the following activities to accomplish the investigation objectives:

- Met with facility personnel to discuss process operations, including waste acceptance/tracking, screening, treatment/storage practices, verification testing, and waste disposal procedures.
- Conducted walk-through tours of facilities to observe process operations, waste acceptance procedures, treatment procedures, compliance sampling, and analysis.
- Observed management, testing, and disposition of on-site generated liquid wastes, including leachate.
- Reviewed and copied (as appropriate) facility documents, including operating plans, procedures, and records. Notably, the waste analysis plans (WAP) required under RCRA (including bench-scale testing of LDR treatment "recipes") and facility-specific procedures or protocols, were reviewed and discussed with facility personnel responsible for implementing the plans and procedures.
- Reviewed treatability studies and treatment recipe development procedures and discussed them with Heritage laboratory personnel.

- Performed a laboratory audit of the sampling and analysis of incoming wastes, bench-scale studies, and stabilized wastes, to assist in determining compliance with RCRA.
- Collected and analyzed samples of batches of RCRA hazardous waste that had been treated by Heritage. Samples were split with Heritage during the inspection.
- Analyzed collected samples at the NEIC laboratory.

All activities of NEIC personnel were performed in accordance with the NEIC quality system.

ON-SITE INSPECTION SUMMARY

NEIC conducted the on-site inspection portion of the RCRA investigation of the Heritage Treatment Facility and the Heritage Roachdale Landfill from July 17 through 26, 2012. The inspection team included Jacquelyn Vega (project manager), Alison Ruhs, and Don Smith from NEIC. Jamie Paulin from EPA Region 5 also attended portions of the inspection. During the opening meeting on July 17, 2012, credentials were presented to Chris Ray, Heritage compliance manager.

NEIC conducted a process review of Heritage operations. During this review, NEIC examined the major operational aspects of the Heritage facilities, including waste acceptance, receiving, and tracking; hard copy and digital data management; and waste management/treatment processes. NEIC's process review was based on discussions with facility personnel, records reviews (hard copy and digital), and a walk-through tour of the operational areas.

Following the process review, NEIC conducted focused inspections of various process units and operations, collected samples of treated wastes, and performed an assessment of Heritage's laboratories. At the conclusion of the on-site inspection on July 26, 2012, NEIC held an exit conference with Heritage personnel to discuss its preliminary inspection observations. During the exit conference, NEIC advised Heritage that final compliance determinations would be made by EPA Region 5.

Before leaving the site, NEIC personnel relinquished custody of split samples collected during the inspection and provided Heritage a complete list of all documents received on-site by NEIC, logs of all photographs taken by NEIC, copies of all photographs taken by NEIC, and a list of outstanding documents requested, but not received, by NEIC during the inspection. Heritage and NEIC personnel agreed upon a date by which Heritage would transmit the outstanding information to NEIC. Following the inspection, Heritage forwarded the outstanding information to NEIC.

PROCESS OVERVIEW

This process overview focuses on Heritage's waste approvals; waste acceptance, receiving, and tracking; hazardous waste stabilization, dose response testing and post-treatment verification sampling and analysis; wastewater treatment; and landfill disposal operations. The Heritage Treatment Facility accepts off-site wastewaters and solid wastes (hazardous and non-hazardous) for treatment. Wastewaters are treated and discharged to the municipal sewer system. Solid hazardous wastes are treated to meet applicable LDR treatment standards and then shipped for disposal at the Heritage Roachdale Landfill. Heritage also conducts fuels blending and various waste treatment and repacking services for shipment off-site to a third party. The primary operations conducted at the Heritage Treatment Facility include:

- Hazardous wastewater treatment
- Cyanide destruction
- Hazardous waste stabilization
- Hazardous debris micro/microencapsulation
- Fuels blending
- Drummed waste management
- Mercury reclamation
- Non-hazardous waste solidification
- Lab depack and consumer goods processing

The Heritage Treatment Facility also uses an off-site 10-day holding facility for sampling of drummed waste prior to acceptance and for bulk storage of hazardous waste prior to stabilization.

The Heritage Treatment Facility has an on-site laboratory that conducts fingerprinting analyses and dose response testing. Also, in a different building at the same location, is the Heritage Environmental Services, LLC commercial laboratory, which conducts regulatory compliance analyses and any additional analyses that the on-site laboratory does not have the capability to perform.

Waste Approvals

Waste must be approved before it can be accepted for treatment at the Heritage Treatment Facility. Customers/generators may either electronically fill out a wastestream survey form or fax the information to the facility. A Heritage account coordinator works with the customer to verify information and determine the appropriate management of the waste. Once the account coordinator preliminarily approves the wastestream survey form, he/she enters information from the form into an electronic database called the Materials Management System (MMS). Analytical data, information from material safety data sheets (MSDSs), and any other pertinent information also can be uploaded into the MMS. The account coordinator determines the product code for the waste and then the approvals coordinator, Christy Tice, provides the final approval. Product codes are internal Heritage codes that denote the type of waste and are used to determine the management system for the waste. The general criteria for determining the product code include whether or not the waste is organic/inorganic, solid/liquid, hazardous/nonhazardous, or in bulk or drummed.

Generally, the customer provides Heritage a representative "sales" or pre-approval sample of each bulk hazardous wastestream. Following review of the wastestream survey, Heritage analyzes the pre-approval sample for the parameters specified in the waste analysis plan (WAP) for the waste management system assigned to that wastestream. The assigned waste

management system specifies the mandatory parameters to be analyzed, which are designed to ensure proper treatment of the wastestream. The waste management system categories used for determining the analytical parameters include: aqueous treatment, solids stabilization, fuels blending, carbon adsorption, organics oxidation, and off-site facility. Supplemental analyses specified for a particular waste management system are performed when requested by Heritage wastestream approvals personnel, facility management, and/or compliance staff.

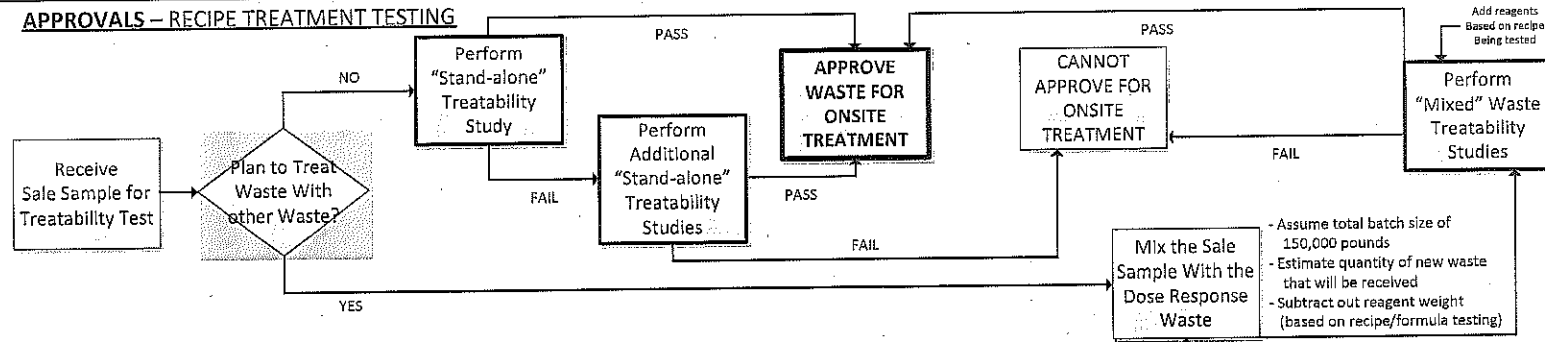
For bulk hazardous wastes that will be stabilized, Heritage uses a portion of the pre-approval sample for a treatability study (**Figure 1**). Most hazardous wastes are treated in the same tank along with other hazardous wastes accepted for treatment. For any hazardous waste that can be treated with other wastes, the pre-approval sample is mixed with the “dose response” sample, which represents all wastestreams treated in mixed batches during the previous month. (The dose response testing flow is indicated in **Figure 1** and is discussed further in the next section.) For hazardous wastes that are treated as a “stand alone” waste, treatability study is conducted on that pre-approval sample only. The treatability study is used to determine the stabilization reagent formulations, or “recipes,” that will be used for treatment and, for mixed batches, to ensure that the waste is compatible with the other wastestreams.

Waste Acceptance, Receiving, and Tracking

Incoming shipments of approved hazardous waste, including lab packs and commercial products, are screened to ensure that the waste received has been approved, and that the waste identified on the manifest is consistent with the waste that has been received. Screening involves a paperwork review and visual inspection to confirm the waste is consistent with current approved wastestream information.

ENFORCEMENT CONFIDENTIAL

APPROVALS – RECIPE TREATMENT TESTING



DOSE RESPONSE – PREVIOUS MONTHLY WASTE COMPOSITE TO ESTABLISH NEXT MONTH'S TREATMENT RECIPE

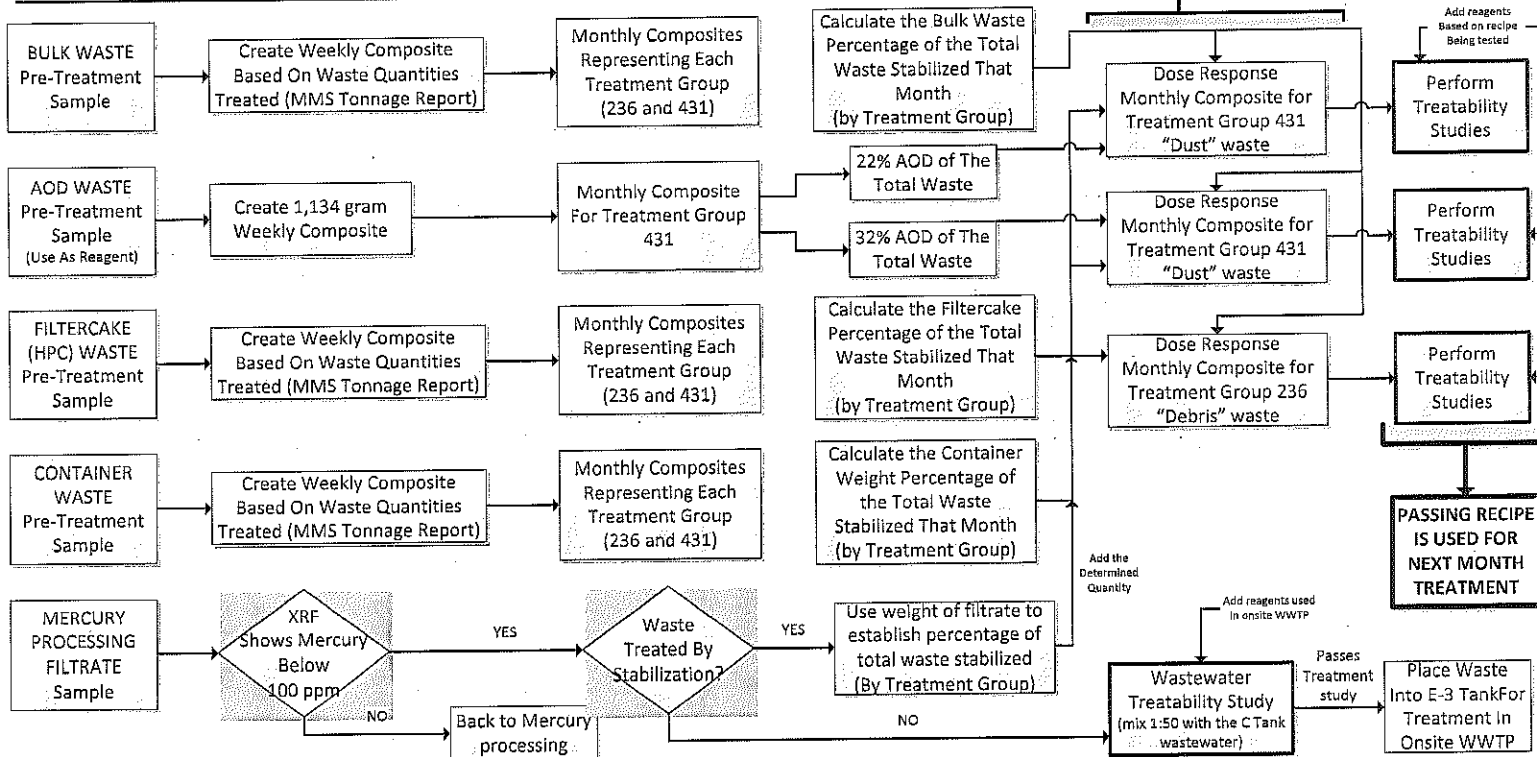


Figure 1. Dose Response Testing Flow Diagram
 Heritage Environmental Services, LLC
 Indianapolis, Indiana

Waste analysis of incoming hazardous wastestreams is performed in two stages. Stage 1 includes analysis of parameters necessary to further confirm waste identification and storage compatibility. Stage 1 analyses are mandatory for each hazardous waste prior to acceptance, with the exception of lab packs and media that are not amenable to sampling. Stage 1 analyses are based on the waste management system for each hazardous waste, and include determination of appearance and visible free liquids for wastes to be stabilized. For wastewater treatment, Stage 1 analyses include determination of pH, appearance, aqueous compatibility, and receiving tank compatibility. Containers placed in storage are segregated based on the results of the Stage 1 analysis and other waste-specific information gathered during the approval phase and pre-acceptance screening.

Stage 2 analyses for incoming hazardous wastestreams consist of mandatory analyses and supplemental analyses based on the specific waste type and/or the need to further characterize a particular hazardous waste prior to treatment. Stage 2 mandatory analyses are based on the management system for each hazardous waste. For wastes to be stabilized, Stage 2 mandatory analyses include determination of hexavalent chromium, cyanide (by Hach kit), aqueous compatibility, alkaline compatibility, consolidation compatibility determination, and stabilization compatibility.

Drummed wastes are sampled at the off-site 10-day facility. Each drum is sampled separately, and then every ten samples for each wastestream are composited in the on-site laboratory for analysis. If the analytical results are outside the waste profile parameters, then each separate drum sample is analyzed. Bulk shipments (roll-offs and tankers) are sampled at the Heritage Treatment Facility.

Stabilization of Hazardous Waste

Hazardous waste stabilization is conducted in two containment buildings, the west containment building (CBW) and the rail containment building (CBR). Each containment building has two in-ground tanks, designated as dump floors, where treatment is conducted. Dump floors 1 and 2 are in the CBW, and dump floors 3 and 4 are in the CBR.

The fixation manager, Jamie Camarillo, is responsible for assembling the mixed treatment batches. J. Camarillo uses the inventory of hazardous waste stored at the 10-day facility to schedule the wastes to be stabilized. The mixed treatment batches are designated as one of two codes: 9000-236 (debris-containing) and 9000-431 (dust). Wastestream treatment group 9000-236 represents all types of hazardous wastes that can be treated by stabilization and may contain combustible materials, including grinding swarf, pallets, or paper (it has no relation to the "debris" definition under LDR). Wastestream treatment group 9000-431 represents all types of hazardous wastes that can be treated by stabilization, but does not include any combustible materials. The main difference between the treatment groups is that 9000-236 must be treated with less AOD than 9000-431. AOD is a steel mill waste, that Heritage uses as a

reagent due to its alkalinity. AOD is also a characteristic hazardous waste for chromium and lead. AOD has quick lime which generates heat when mixed with water, so less AOD is used when there are combustibles in the batch that are a fire hazard.

A description of the wastes and reagents put into a dump floor are handwritten into a daily treatment log for each containment building. For each dump floor, when treatment of a batch is completed, the word "end" is entered into the log. The log includes: the document number (which represents a wastestream within a shipment), weight, time, unloader initials, and description (generator or type of waste). The document number can be tracked to the MMS to determine information on the wastestream profile, the generator, and incoming manifest shipment information. However, the only record of wastestreams mixed in a batch is in the handwritten treatment log. This information is not entered into the MMS.

The containment building doors are closed during unloading, mixing, and loading operations. Reagents are added to the dump floor according to the recipes, or stabilization reagent formulations, that were developed using the results of the dose response testing from the previous month for treatment groups 9000-236 and 9000-431. Approximately three or four stabilization reagent formulations are approved for each treatment group. An excavator is used to mix the wastes within a dump floor. Water is added during mixing, but the amount of water used is not recorded. The operator decides how long to mix the batch, usually about 45 minutes. When mixing is completed, the batch is loaded from the dump floor into trucks for shipment to the Heritage Roachdale Landfill. The "outbound" information for the treated waste is recorded on the back page of the daily treatment log, including the manifest number, truck number, dump floor, and weight.

Dose Response Testing and Post-treatment Verification Sampling and Analysis

Heritage conducts monthly dose response testing for treatment groups 9000-236 and 9000-431 to determine the stabilization reagent formulation required to meet the applicable LDR treatment standards for metals. The dose response testing process is summarized in **Figure 1**.

Dose response testing is used to determine the stabilization reagent formulation for the period beginning with approval of a testing event's results and ending with approval of the next testing event's results. For materials subject to dose response testing, a sample representing the amount of wastes treated from the applicable processes is collected to prepare the stabilization reagent formulation samples. These samples are added to a jar of material collected during the month. Various mix ratios of waste and stabilization reagent(s), if applicable to the process, are prepared and tested by toxicity characteristic leaching procedure (TCLP) analysis. The initial stabilization reagent formulation includes a range of three to four weight ratios within which the formulation that achieves compliance with applicable LDR treatment standards typically falls. The on-site laboratory analyzes each mixture to determine if it meets the applicable LDR treatment standards.

The on-site laboratory supervisor then reviews the analytical results and compares the results to the applicable LDR treatment standards for metals. Stabilization reagent formulations are selected for each treatment group and communicated to the fixation supervisor. The designated stabilization reagent formulation is maintained as the minimum formulation until new dose response data indicate an adjustment is necessary.

Heritage conducts monthly post-treatment verification sampling and analysis of wastestreams generated from each stabilization/LDR treatment process (treatment groups 9000-236 and 9000-431). Once a treatment batch is designated for the monthly compliance sampling for a treatment process, the first truckload is put in a roll-off box for sampling. The rest of the batch is put into trucks, which remain at the Heritage Treatment Facility until preliminary analytical results show the sample meets the LDR treatment standards. The material in the roll-off is sampled by dividing the roll-off into four equal portions. One grab sample is obtained from each of the four portions. The four grab samples are then composited into a single sample which is then analyzed at the Heritage commercial laboratory. The sampled roll-off container is stored at the Heritage Treatment Facility until all quality assurance documentation is completed. If the sampled roll-off fails to meet all applicable LDR treatment standards, the entire treated batch is retreated and/or retested until sample results verify the applicable LDR treatment standards are met.

Wastewater Treatment Plant

The Heritage Treatment Facility operates an on-site centralized wastewater treatment plant that discharges to the Indianapolis municipal sewer system. Metal-, cyanide-, and organic-bearing leachate are treated. The tanks and filter presses associated with the wastewater treatment system are included as units in the RCRA hazardous waste management permit.

Metal-bearing wastewaters are treated with various reagents depending on the waste, including lime, sulfide, and ferrous chloride (pickle liquor). Then, the wastewater is sent through four primary filter presses. Polymer flocculant is added, and the wastewater next is sent through two secondary filter presses. The filter cake is treated by the on-site stabilization process.

Cyanide-bearing wastewaters are treated in the cyanide destruction unit, where an elevated temperature is used to destroy the cyanide. The treated wastewater is sampled at an internal outfall point, and then sent to primary wastewater treatment in the wastewater treatment plant.

Additional Treatment Processes

The Heritage Treatment Facility operates a mercury treatment and reclamation process. Mercury-containing wastes are put into a tank treatment system; sodium hydroxide is added to convert the mercury to mercury oxide, and then the material is piped to tank 3 for thickening and

settling. The settled salts are sent off-site for mercury retort. The filtrate is tested by X-ray fluorescence (XRF) to ensure the mercury concentration is less than 100 parts per million (ppm). If it is greater than 100 ppm, then sodium sulfate is added for further settling. Once the mercury concentration of the filtrate is less than 100 ppm, it is taken by tote and pumped into tank E-3. The contents of tank E-3 may be discharged to the wastewater treatment plant or taken by tanker truck for stabilization in the on-site stabilization process. Additionally, the glass vials that contained the mercury wastes prior to treatment are collected and stabilized in the on-site stabilization process. The mercury filtrate and/or mercury-contaminated glass may be added into any of the treatment process batches. The total amount of mercury filtrate added for each treatment process for each month is included by weight percent in the dose response testing for the next month (Figure 1).

The Heritage Treatment Facility also operates a fuel blending operation on-site. Both hazardous and non-hazardous materials are brought in by both drums and tank trucks. Wastes are segregated into tanks according to their British thermal unit (BTU) values. Generally, tank 17 receives waste with the highest BTU values, tank 18 receives waste with with median e BTU values, and tanks 19 and 20 receive waste with the lowest BTU values. The tanks are equipped with mixers, but no treatment other than mixing is performed. Heritage has determined the tanks to be Level 1 tanks under Subpart CC of RCRA, and each of the tanks has a conservation vent. The tanks are sampled each morning for BTU and water content. The fuels are currently shipped to Buzzi Unicem USA in Greencastle, Indiana, or EssRock in Logansport, Indiana. If the fuels contain too much water or are incompatible with other fuels, they are shipped off-site for incineration at Heritage WTI in East Liverpool, Ohio.

Used oil is brought in to the Heritage Treatment Facility for consolidation and then shipment off-site for recycling to United Recycling in Cincinnati, Ohio. The incoming used oil is tested for total halogens. If total halogens are greater than 1,000 ppm, then the used oil is handled through the on-site fuels blending process.

Heritage Roachdale Landfill

The Heritage Roachdale Landfill may accept non-hazardous waste and hazardous waste that meets the applicable LDR treatment standards under the provisions of 40 Code of Federal Regulations (CFR) Part 268 and 40 CFR Part 264.555 for corrective action management unit ("CAMU") -eligible hazardous waste and polychlorinated biphenyl (PCB) remediation waste. The landfill has a RCRA Subtitle D landfill cell for disposal of non-hazardous waste. Most of the cell is closed; only about 3 acres are still open and are only used for disposal of industrial waste.

The part of the landfill subject to RCRA Subtitle C hazardous waste requirements was constructed in two separate units over time. Unit 1 was closed in 2008, and included two phases.

Unit 2 currently is operating, with hazardous waste being placed in phase 2;. phase 3 is under construction.

Unit 1 includes a phase 1 and phase 2 leachate collection system. Each phase has a leachate collection tank that Heritage manages as less-than-90-day hazardous waste accumulation tanks. For unit 2, all the leachate is collected in one leachate tank, which is also managed as a less-than-90-day hazardous waste accumulation tank. The leachate from unit 2 cell 1 contains p-cresol, which must be treated prior to discharge at the Heritage Treatment Facility. The unit 2 leachate tank is used to treat the leachate by pH adjustment, bacterial treatment, and aeration. The treated leachate is shipped to the Heritage Treatment Facility for discharge to the Indianapolis municipal sewer system.

Before a wastestream is first landfilled, Heritage confirms the generator wastestream survey form and any wastestream profile information by conducting wastestream characterization analysis outlined in the permit. Wastestream re-characterization analysis is required to be done annually. Wastestreams that are due for a wastestream re-characterization analysis, but are not shipped during the timeframe in which they are to be sampled, are sampled the next time they are shipped. All wastestream characterization and re-characterization analyses are conducted at the Heritage commercial laboratory. If the load does not meet LDR treatment standards or the CAMU-eligible waste requirements, the load is re-sampled. If the analyses indicate the verification sample does not meet the requirements, the load will not be accepted at the landfill. Any waste shipments not meeting the requirements will be considered for treatment at the Heritage Treatment Facility.

Each truckload brought to the landfill is fingerprinted for appearance, pH by making a waste slurry, and free liquids by conducting the paint filter test. The date, document number, wastestream number, weight of load, and burial location are recorded on a log for each load. This information is then entered into the MMS.

LABORATORY ACTIVITIES SUMMARY

SAMPLE RECEIPT AND ANALYSIS

Twenty solid samples, collected by project team member D. Smith, were delivered via FedEx to the NEIC laboratory for analysis. All samples were handled in accordance with the NEIC operating procedure *Evidence Management*, NEICPROC/00-059R3. Table 1 summarizes the delivery, receipt, and transfers associated with these samples.

Table 1. LABORATORY SAMPLE DELIVERY, RECEIPT, AND TRANSFER
Heritage Environmental Services
Indianapolis, Indiana

Event	Date	Comments
Shipped	July 25, 2012	One large, locked shipping case was shipped, via FedEx, by project team member A. Ruhs (tracking No. 529434613903).
Received at NEIC	July 26, 2012	Locked shipping case arrived at NEIC and was placed in room 1C-225 for storage until custody transfer.
Custody transferred	July 30, 2012	Ben Burns, NEIC principal analytical chemist for the investigation, unpacked and inspected 20 solid samples no damage or custody issues were observed. B. Burns verified chain of custody records N13386 and N13387; no discrepancies were noted. The evidence was then stored in a locked cabinet under the custody of B. Burns.

ANALYTICAL PROCEDURES AND ANALYSTS

The NEIC laboratory was requested to perform TCLP extractions for all the samples and analyze the subsequent TCLP sample extracts for 20 metal constituents. Cyanide analysis was also requested for all 20 solid samples. TCLP extractions and analyses were conducted in accordance with the NEIC quality system and were performed by NEIC personnel. Analytical methods used and personnel are summarized in Table 2.

Table 2. ANALYTICAL PROCEDURES AND ANALYSTS
Heritage Environmental Services
Indianapolis, Indiana

Procedure	Analyst(s)
<i>Physical Description/Phase Separation</i> , NEICPROC/00-045R3	Ben Burns
<i>Toxicity Characteristic Leaching Procedure</i> , EPA SW-846 Method 1311	Ben Burns, James Stamey, Cyndy Lemmon
<i>Mercury Analysis of TCLP Extracts</i> , NEICPROC/00-062R4, Appendix F, <i>Mercury Analysis by Cold Vapor Atomic Absorption (CVAA)</i>	Ben Burns
<i>Metals Analysis of TCLP Extracts</i> , EPA Method 200.8, <i>Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)</i>	James Stamey

Table 2. ANALYTICAL PROCEDURES AND ANALYSTS
Heritage Environmental Services
Indianapolis, Indiana

Procedure	Analyst(s)
<i>Metals Analysis of TCLP Extracts</i> , EPA Method 200.7, Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES)	Willis Collins
<i>Total Cyanide Distillation and Analysis</i> , EPA SW-846 Method 9010C Total and Amenable Cyanide: Distillation, and EPA SW-846 Method 9014 Titrimetric and Manual Spectrophotometric Determinative Methods for Cyanide	Richard Martinez

ANALYTICAL RESULTS

Analytical results for the TCLP extractions for 14 metal constituents covered by 40 CFR §268.48 universal treatment standards (UTS) were measured by ICP-MS and are presented in Table 3. Results are shown in milligrams per liter (mg/L) TCLP, except for cyanide, which is shown in milligrams per kilogram (mg/kg). Analytical results for the TCLP extractions for six other analytes not covered by universal treatment standards were measured by ICP-OES and are presented in Table 4. Results are shown in mg/L TCLP. Total cyanide analysis was performed on the solid samples. None of the measurement results for cyanide approached the universal treatment standard concentration limits for either total or amenable cyanide.

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Table 3 LABORATORY UTS ANALYTICAL RESULTS
Heritage Environmental Services, LLC
Indianapolis, Indiana

NEIC Sample Station No.	NEIC Sample Tag No.	Results (mg/L TCLP), universal treatment standards values shown under constituents (exceedances shown in bold)													
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
		1.15	5.00	21.0	1.22	0.11	0.60	0.75	0.025	11.0	5.70	0.14	0.20	1.60	4.30
S01	NE31494	<0.02	<0.03	<1.1	<0.01	0.04	<0.06	1.47	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S01 Dup	NE31494	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	1.46	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S02	NE31496	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	1.69	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S03	NE31498	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	2.03	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S04	NE31500	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	1.90	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S04 Dup	NE31500	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	1.63	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S05	NE31502	<0.02	<0.03	<1.1	<0.01	0.04	<0.06	1.60	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S05 Dup	NE31502	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	2.34	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S06	NE31504	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	1.81	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S06 Dup	NE31504	<0.02	<0.03	<1.1	<0.01	0.04	<0.06	1.82	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S07	NE31506	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	1.79	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S08	NE31508	<0.02	<0.03	<1.1	<0.01	0.03	<0.06	2.26	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S09	NE31510	<0.02	0.10	<1.1	<0.01	0.03	<0.06	2.32	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S10	NE31512	<0.02	<0.03	<1.1	<0.01	0.04	<0.60	2.74	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S11	NE31514	0.04	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<11.0	<0.12	<0.07	<0.20	<0.02	<4.30
S11 Dup	NE31514	0.03	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<11.0	<0.12	<0.07	<0.20	<0.02	<4.30
S12	NE31516	0.02	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<11.0	<0.12	<0.07	<0.20	<0.02	<4.30
S13	NE31518	<0.02	<0.03	<1.1	<0.01	<0.01	<0.60	<0.01	<0.001	<11.0	<0.12	<0.07	<0.20	<1.60	<4.30
S13 Dup	NE31518	<0.02	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<11.0	<0.12	<0.07	<0.20	<0.02	<4.30
S14	NE31520	0.03	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S14 Dup	NE31520	0.03	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S15	NE31522	0.04	<0.03	<1.1	<0.01	0.03	<0.06	0.04	<0.001	5.3	<0.12	<0.07	<0.20	<0.02	60.11
S16	NE31524	0.04	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S17	NE31526	0.05	<0.03	<1.1	<0.01	<0.01	<0.06	<0.01	<0.001	<0.5	<0.12	<0.07	<0.20	<0.02	<4.30
S18	NE31528	0.05	<0.03	<1.1	<0.01	0.02	<0.06	0.03	<0.001	<11.0	<0.12	<0.07	<0.20	<0.02	56.72
S19	NE31530	0.03	<0.03	<1.1	<0.01	0.03	<0.06	0.06	<0.001	20.9	<0.12	<0.07	<0.20	<0.02	435.17
S19 Dup	NE31530	0.04	<0.03	<1.1	<0.01	0.04	<0.06	0.06	<0.001	19.8	<0.12	<0.07	<0.20	<0.02	410.01
S20	NE31532	0.05	<0.03	<1.1	<0.01	0.04	<0.06	0.06	<0.001	7.4	<0.12	<0.07	<0.20	<0.02	82.20

"Dup" represents second subsample and TCLP

Table 4 LABORATORY ANALYTICAL RESULTS (NON-UTS)
Heritage Environmental Services, LLC
Indianapolis, Indiana

NEIC Sample Station No.	NEIC Sample Tag No.	Results (mg/L TCLP)					
		Calcium	Copper	Iron	Magnesium	Potassium	Sodium
S01	NE31494	2680	<0.04	<0.49	<0.21	140	900
S01 Dup	NE31494	2980	<0.04	<0.49	<0.21	160	990
S02	NE31496	2960	<0.04	<0.49	<0.21	160	1000
S03	NE31498	2940	<0.04	<0.49	<0.21	160	960
S04	NE31500	3010	<0.04	<0.49	<0.21	160	1000
S04 Dup	NE31500	2870	<0.04	<0.49	<0.21	150	950
S05	NE31502	2940	<0.04	<0.49	<0.21	160	940
S05 Dup	NE31502	2980	<0.04	<0.49	<0.21	170	960
S06	NE31504	2830	<0.04	<0.49	<0.21	150	930
S06 Dup	NE31504	3150	<0.04	<0.49	<0.21	170	1050
S07	NE31506	2850	<0.04	<0.49	<0.21	160	950
S08	NE31508	2770	<0.04	<0.49	<0.21	150	900
S09	NE31510	2960	<0.04	<0.49	<0.21	160	930
S10	NE31512	2630	<0.04	<0.49	<0.21	150	850
S11	NE31514	2410	<0.04	<0.49	35	170	470
S11 Dup	NE31514	2590	<0.04	<0.49	42	190	540
S12	NE31516	2740	<0.04	<0.49	7.7	220	530
S13	NE31518	2680	<0.04	<0.49	6.7	200	510
S13 Dup	NE31518	2590	<0.04	<0.49	5.4	190	490
S14	NE31520	2860	<0.04	<0.49	42	190	570
S14 Dup	NE31520	2620	<0.04	<0.49	44	180	510
S15	NE31522	2470	<0.04	<0.49	190	120	300
S16	NE31524	2550	<0.04	<0.49	110	160	460
S17	NE31526	2550	<0.04	<0.49	100	230	530
S18	NE31528	2610	<0.04	<0.49	160	140	450
S19	NE31530	2030	<0.04	<0.49	320	110	250
S19 Dup	NE31530	2110	<0.04	<0.49	320	110	260
S20	NE31532	2570	<0.04	<0.49	190	140	400

"Dup" represents second subsample and TCLP

DATA QUALITY SUMMARY

Eight samples were chosen (based on most mass available) and subsampled in duplicate. TCLP was performed on these duplicates which were reported as independent analyses to evaluate the reproducibility of the subsamples. Quality control measures for TCLP metals determinations included matrix matching, blanks, spikes, independent calibration verification (ICV), continuing calibration verification (CCV), and replicate sample analysis. Quality control measures for the mercury determinations included blanks, spikes, ICV, CCV, and replicate sample analysis. Quality control measures for cyanide distillation included distilling blanks, spikes, control standards, and replicate sample distillations. Quality control measures for cyanide determination included blanks, control standards, CCV, spikes, and replicate sample measurements. Measurement uncertainty for the metal analytes in Table 3 was estimated to be

+/- 5.8% of the reported value. Measurement uncertainty for the analytes in Table 4 was not shown as this data is supplementary information. Measurement uncertainty for the cyanide determination was not shown as cyanide values were not reported.

SUMMARY OF OBSERVATIONS

The following key observations and areas of concern were made at the time of the inspection, and during review of documents received prior to, during, and after NEIC's inspection of the Heritage facility. The key observations pertain to areas or issues identified by NEIC that may have potential compliance implications, but are neither inclusive nor exclusive of all such potential areas or issues. Areas of concern are inspection observations of potential problems/activities that could impact the environment, result in future noncompliance with permit or regulatory requirements, and/or are areas associated with pollution prevention issues. Key observations are designated and organized by number, while areas of concern are designated and organized by letter. U.S. EPA Region 5 will assess the applicability of regulatory requirements based on its review of this report and other technical, regulatory, and facility information.

#	Finding/Explanation of Findings
KEY OBSERVATIONS	
1	Heritage disposed of two batches of treated hazardous waste that exceeded the LDR treatment standards in the Heritage Roachdale landfill.
2	Wastestreams that are received in limited amounts have never received post-treatment verification sampling and analysis to ensure the batch meets LDR treatment standards.
AREAS OF CONCERN	
A	The dose response testing that Heritage uses to confirm the stabilization reagent formulation for treatment groups 9000-431 and 900-236 is based on the assumption that the wastestreams treated to meet LDR treatment standards are always consistent and mixed in the same ratios. This assumption causes a generator's wastestreams that are treated in limited amounts to be diluted by large-volume wastes during the dose response testing.
B	Once wastestreams are treated, it is very difficult to follow a specific shipment from cradle to grave. The handwritten daily treatment logs are the only documentation used once a wastestream is dumped for treatment, which makes it difficult to determine which wastes were batched together for stabilization. When a treated batch fails to meet the LDR treatment standard, it would be difficult to determine the root cause and be able to adjust the stabilization reagent formulation appropriately.
C	The Heritage on-site laboratory uses X-ray fluorescence (XRF) to measure the concentrations of certain regulated constituents, such as chlorine in incoming waste and mercury in liquids from the mercury treatment process. Chlorine is used to screen for PCBs at concentrations of greater than 50 ppm, and mercury is measured to verify that its concentration is less than 100 ppm. At the time of the NEIC inspection, the XRF instrument was only calibrated once a year. In addition, a quality control standard was not analyzed with each batch of samples to verify instrument performance.
D	Heritage's on-site laboratory is not conducting the pre-test required to determine the proper extraction fluid for the TCLP analysis.

Photos - Heritage Indianapolis

VP0986

Overview Map



RIMG0001.JPG

Title:

**Attributes**

File Name	RIMG0001.JPG
Date Time Stamp	7/18/2012 11:25:32 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Tanks E-2 and E-1 inground tanks that feed either the CDU or CWT.



Attributes

File Name	RIMG0002.JPG
Date Time Stamp	7/18/2012 11:33:22 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Overview shot of acid and base tanks (left), tanker unloading (front), and fuel tanks (right)

RIMG0003.JPG

Title:



Attributes	
File Name	RIMG0003.JPG
Date Time Stamp	7/19/2012 2:56:03 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Heritage haul truck with treated waste arriving at the landfill receiving scale.

RIMG0004.JPG

Title:



Attributes	
File Name	RIMG0004.JPG
Date Time Stamp	7/19/2012 2:57:14 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	On top of sampling rack at landfill, looking into the haul truck with treated waste (waste group 9000-236).

RIMG0005.JPG

Title:



Attributes	
File Name	RIMG0005.JPG
Date Time Stamp	7/19/2012 3:02:33 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 38"
Longitude	W 86° 55' 45"
Photo Direction	257° WSW
Description:	Sampling equipment at the sampling rack at landfill receiving.

RIMG0006.JPG

Title:



Attributes

File Name	RIMG0006.JPG
Date Time Stamp	7/19/2012 3:04:08 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 38"
Longitude	W 86° 55' 45"
Photo Direction	186° S
Description:	Sampling of waste (9000-236) at landfill receiving sampling rack.

RIMG0007.JPG

Title:



Attributes	
File Name	RIMG0007.JPG
Date Time Stamp	7/19/2012 3:04:12 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 38"
Longitude	W 86° 55' 45"
Photo Direction	185° S
Description:	Sampling of waste (9000-236) at landfill receiving sampling rack.

RIMG0008.JPG

Title:



Attributes

File Name	RIMG0008.JPG
Date Time Stamp	7/19/2012 3:04:15 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 38"
Longitude	W 86° 55' 45"
Photo Direction	194° SSW
Description:	Sampling of waste (9000-236) at landfill receiving sampling rack.

RIMG0009.JPG

Title:



Attributes	
File Name	RIMG0009.JPG
Date Time Stamp	7/19/2012 3:13:27 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	28° NNE
Description:	Trucks coming up landfill Unit 2, cell 1, going to dump in cell 2.



Attributes	
File Name	RIMG0010.JPG
Date Time Stamp	7/19/2012 3:13:32 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	41° NE
Description:	Trucks coming up landfill Unit 2, cell 1, going to dump in cell 2.

RIMG0011.JPG

Title:



Attributes	
File Name	RIMG0011.JPG
Date Time Stamp	7/19/2012 3:13:39 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	86° E
Description:	Overview of active face at Unit 2 landfill, cell 2.

RIMG0012.JPG

Title:



Attributes	
File Name	RIMG0012.JPG
Date Time Stamp	7/19/2012 3:15:12 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	46° NE
Description:	Dumping of waste at unit 2 landfill, cell 2 active face

RIMG0013.JPG

Title:



Attributes	
File Name	RIMG0013.JPG
Date Time Stamp	7/19/2012 3:15:32 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	46° NE
Description:	Dumping of waste at unit 2 landfill, cell 2 active face

RIMG0014.JPG

Title:



Attributes	
File Name	RIMG0014.JPG
Date Time Stamp	7/19/2012 3:15:37 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	47° NE
Description:	Dumping of waste at unit 2 landfill, cell 2 active face

RIMG0015.JPG

Title:



Attributes	
File Name	RIMG0015.JPG
Date Time Stamp	7/19/2012 3:15:42 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	46° NE
Description:	Dumping of waste at unit 2 landfill, cell 2 active face

RIMG0016.JPG

Title:



Attributes	
File Name	RIMG0016.JPG
Date Time Stamp	7/19/2012 3:15:48 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	44° NE
Description:	Dumping of waste at unit 2 landfill, cell 2 active face

RIMG0017.JPG

Title:



Attributes	
File Name	RIMG0017.JPG
Date Time Stamp	7/19/2012 3:16:11 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	56° ENE
Description:	Second truck dumping waste at Unit 2 landfill, cell 2 active face.



Attributes	
File Name	RIMG0018.JPG
Date Time Stamp	7/19/2012 3:17:46 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	29° NNE
Description:	Second truck dumping waste at Unit 2 landfill, cell 2 active face.

RIMG0019.JPG

Title:



Attributes	
File Name	RIMG0019.JPG
Date Time Stamp	7/19/2012 3:18:06 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	23° NNE
Description:	Second truck dumping waste at Unit 2 landfill, cell 2 active face.

RIMG0020.JPG

Title:



Attributes	
File Name	RIMG0020.JPG
Date Time Stamp	7/19/2012 3:18:18 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	25° NNE
Description:	Second truck dumping waste at Unit 2 landfill, cell 2 active face.

RIMG0021.JPG

Title:



Attributes	
File Name	RIMG0021.JPG
Date Time Stamp	7/19/2012 3:18:42 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	21° NNE
Description:	Second truck dumping waste at Unit 2 landfill, cell 2 active face.

RIMG0022.JPG

Title:



Attributes	
File Name	RIMG0022.JPG
Date Time Stamp	7/19/2012 3:19:23 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	23° NNE
Description:	Close-up on both dumped wastes.

RIMG0023.JPG

Title:



Attributes	
File Name	RIMG0023.JPG
Date Time Stamp	7/19/2012 3:20:29 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	25° NNE
Description:	Dozing of dumped waste at Unit 2 landfill, cell 2 up the active face.

RIMG0024.JPG

Title:



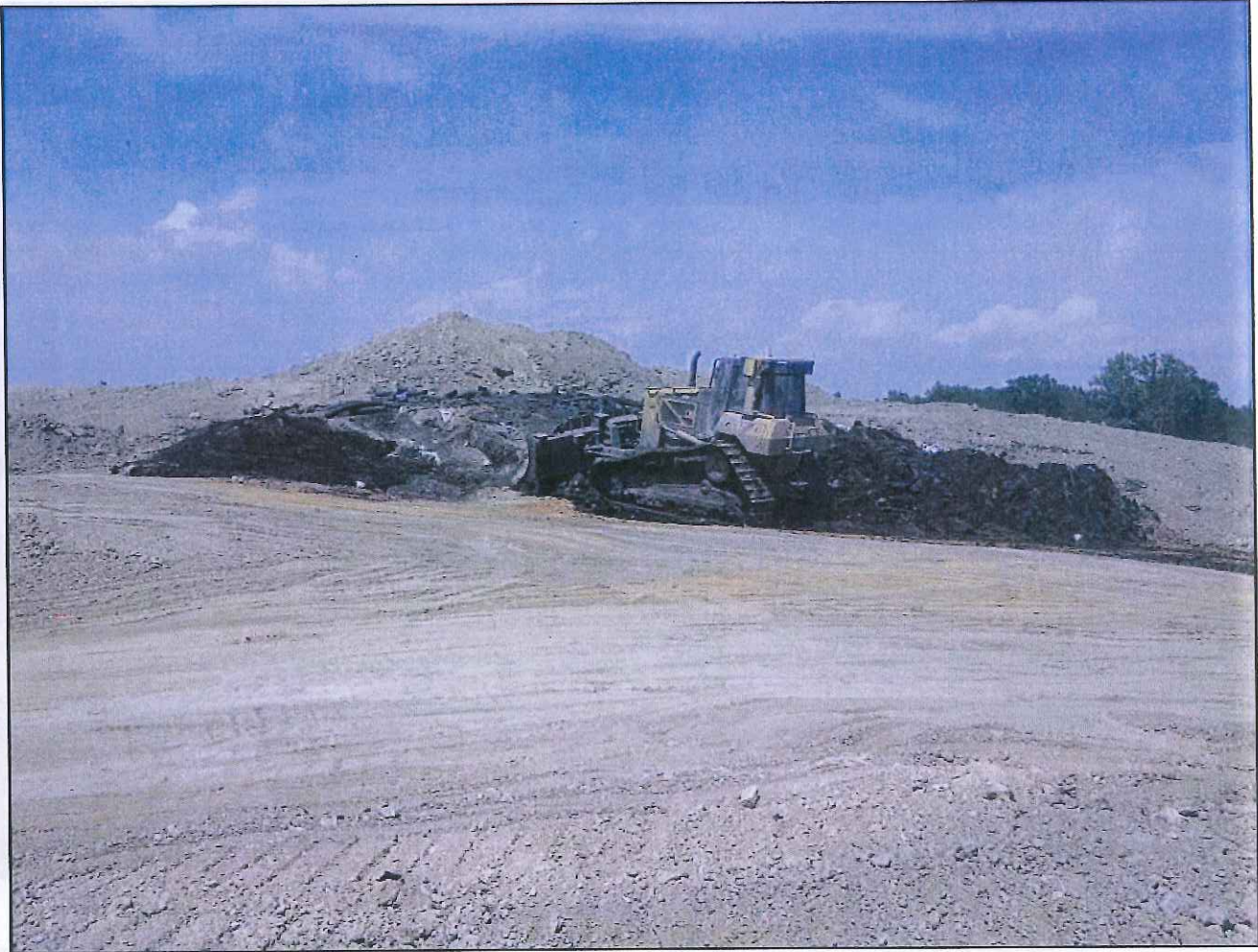
Attributes	
File Name	RIMG0024.JPG
Date Time Stamp	7/19/2012 3:21:32 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	16° NNE
Description:	Dozing of dumped waste at Unit 2 landfill, cell 2 up the active face.



Attributes	
File Name	RIMG0025.JPG
Date Time Stamp	7/19/2012 3:21:40 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	9° N
Description:	Dozing of dumped waste at Unit 2 landfill, cell 2 up the active face.

RIMG0026.JPG

Title:



Attributes	
File Name	RIMG0026.JPG
Date Time Stamp	7/19/2012 3:22:33 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 59"
Longitude	W 86° 55' 59"
Photo Direction	8° N
Description:	Dozing of dumped waste at Unit 2 landfill, cell 2 up the active face.

RIMG0027.JPG

Title:



Attributes	
File Name	RIMG0027.JPG
Date Time Stamp	7/19/2012 3:30:44 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 52"
Longitude	W 86° 55' 56"
Photo Direction	177° S
Description:	Inside "bio-treatment" area at the landfill, close-up on aeration tank used to pre-treat the leachate to meet BOD and phenol/p-cresol limits at the CWT.

RIMG0028.JPG

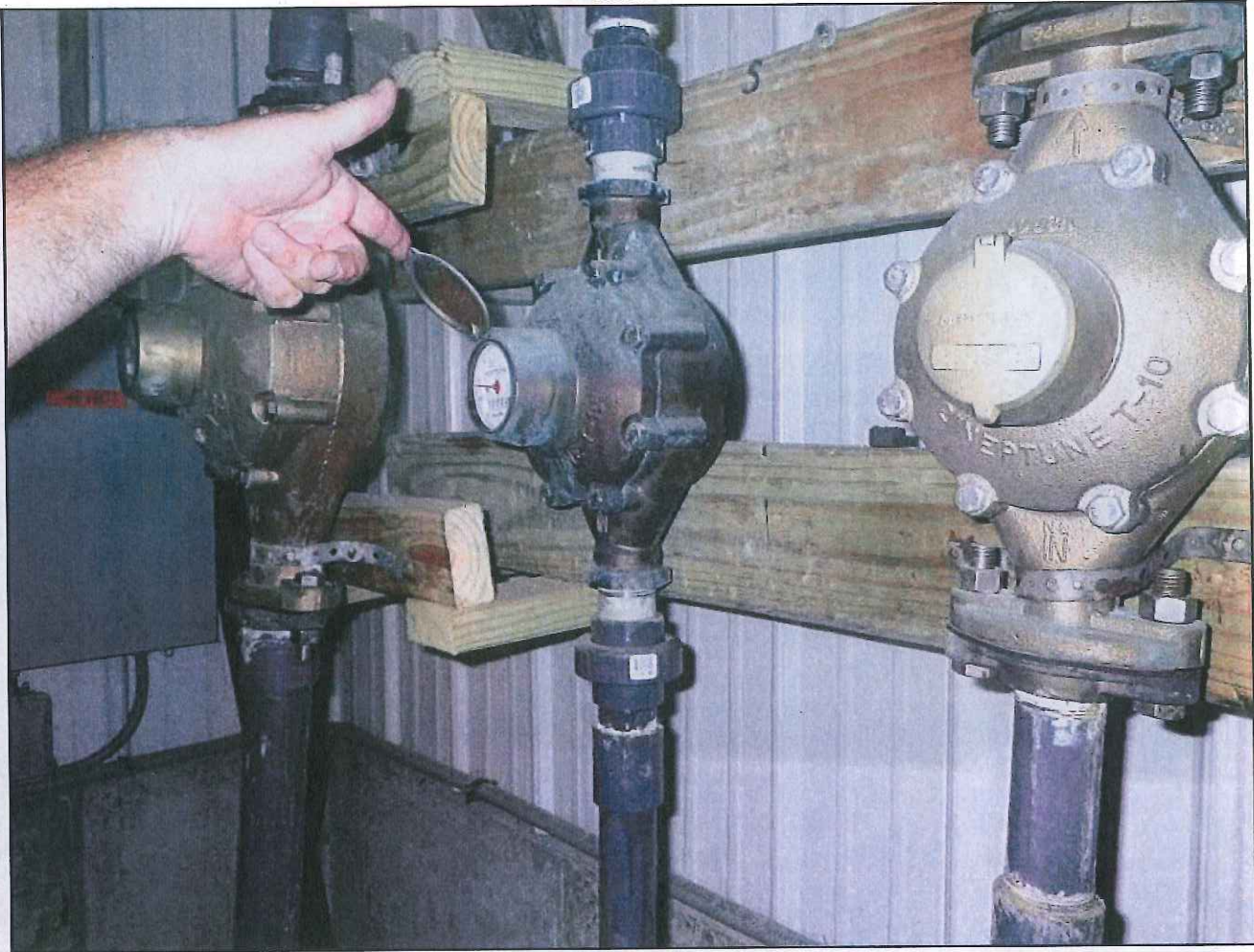
Title:



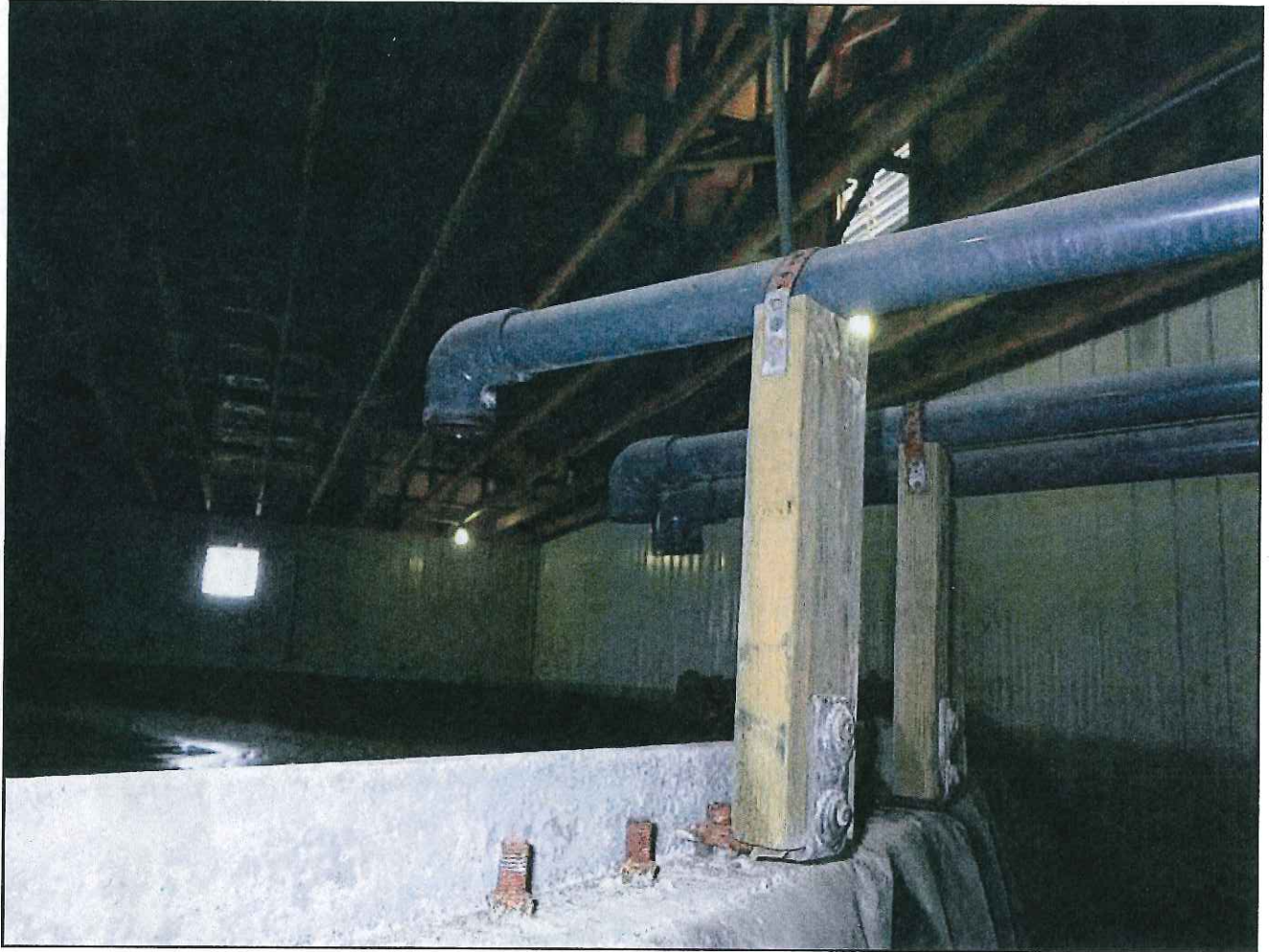
Attributes	
File Name	RIMG0028.JPG
Date Time Stamp	7/19/2012 3:30:51 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 52"
Longitude	W 86° 55' 56"
Photo Direction	201° SSW
Description:	Inside "bio-treatment" area at the landfill, close-up on aeration tank used to pre-treat the leachate to meet BOD and phenol/p-cresol limits at the CWT.



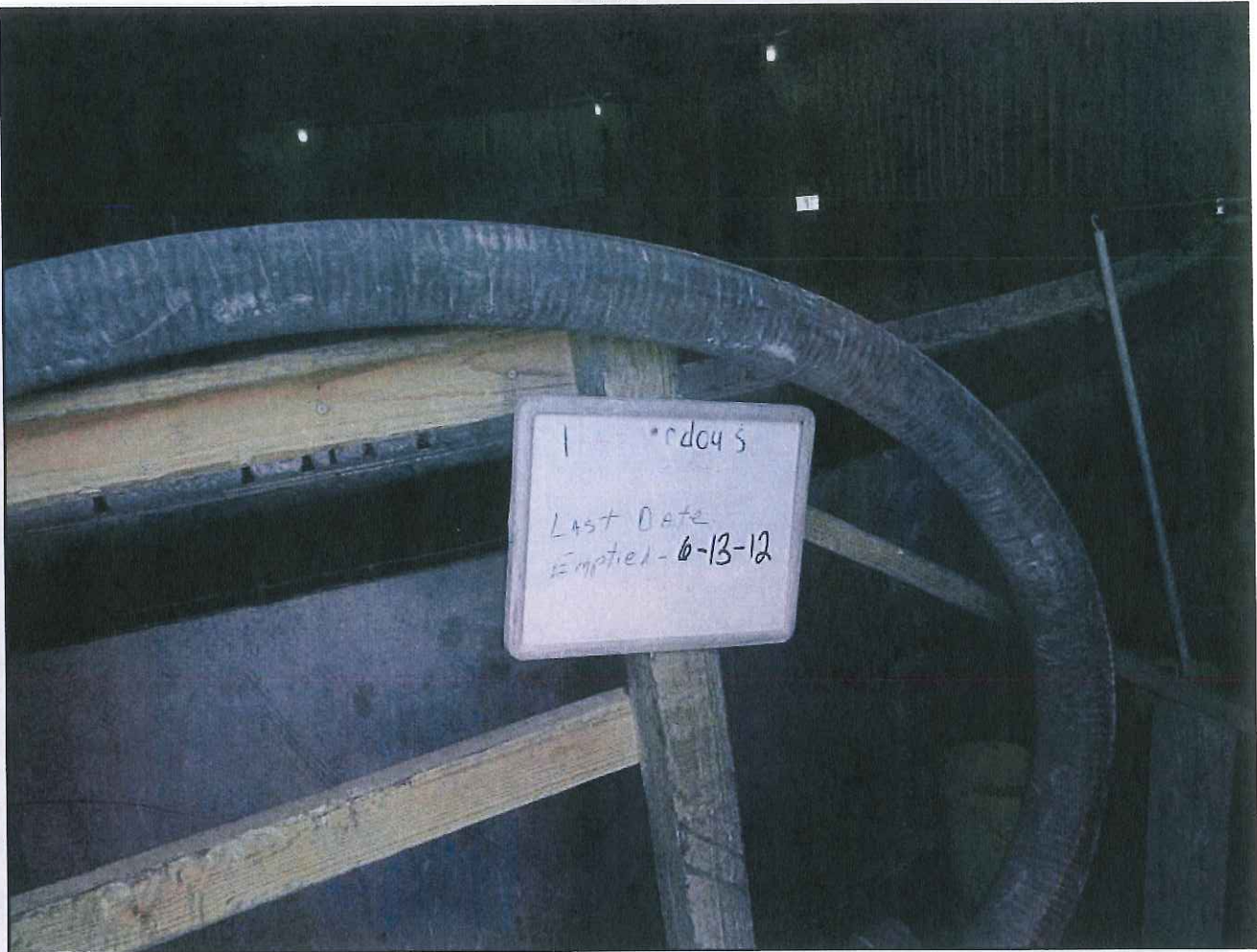
Attributes	
File Name	RIMG0029.JPG
Date Time Stamp	7/19/2012 3:36:56 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 50"
Longitude	W 86° 55' 56"
Photo Direction	145° SE
Description:	Close-up on pH meter at the "bio-treatment" for leachate pre-treatment at the landfill. HCl is used to adjust pH.



Attributes	
File Name	RIMG0030.JPG
Date Time Stamp	7/19/2012 3:39:45 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 50"
Longitude	W 86° 55' 56"
Photo Direction	203° SSW
Description:	Flowmeters for leachate coming from the primary leachate system for Unit 2 cell 1 (left), and cell 2 primary and secondary system (right).



Attributes	
File Name	RIMG0031.JPG
Date Time Stamp	7/19/2012 3:39:58 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 50"
Longitude	W 86° 55' 56"
Photo Direction	83° E
Description:	Discharge lines into the aeration tank for unit 2 cell 2 primary (left) and secondary leachate (middle), and cell 1 primary leachate (right).



Attributes	
File Name	RIMG0032.JPG
Date Time Stamp	7/19/2012 3:42:37 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 53"
Longitude	W 86° 55' 56"
Photo Direction	203° SSW
Description:	Sign at the entrance of the bio-treatment area (aeration tank), which is a less-than-90-day collection tank for Unit 2 cell 1 and leachate.

RIMG0033.JPG

Title:



Attributes	
File Name	RIMG0033.JPG
Date Time Stamp	7/19/2012 3:43:50 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 53"
Longitude	W 86° 55' 55"
Photo Direction	51° NE
Description:	Overview shot of the construction of Unit 2 cell 3.

RIMG0034.JPG

Title:



Attributes	
File Name	RIMG0034.JPG
Date Time Stamp	7/19/2012 3:44:30 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 53"
Longitude	W 86° 55' 55"
Photo Direction	69° ENE
Description:	Overview shot of the construction of Unit 2 cell 3.

RIMG0035.JPG

Title:



Attributes	
File Name	RIMG0035.JPG
Date Time Stamp	7/19/2012 3:57:24 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Secondary leachate collection totes for landfill unit 1, phase 1.

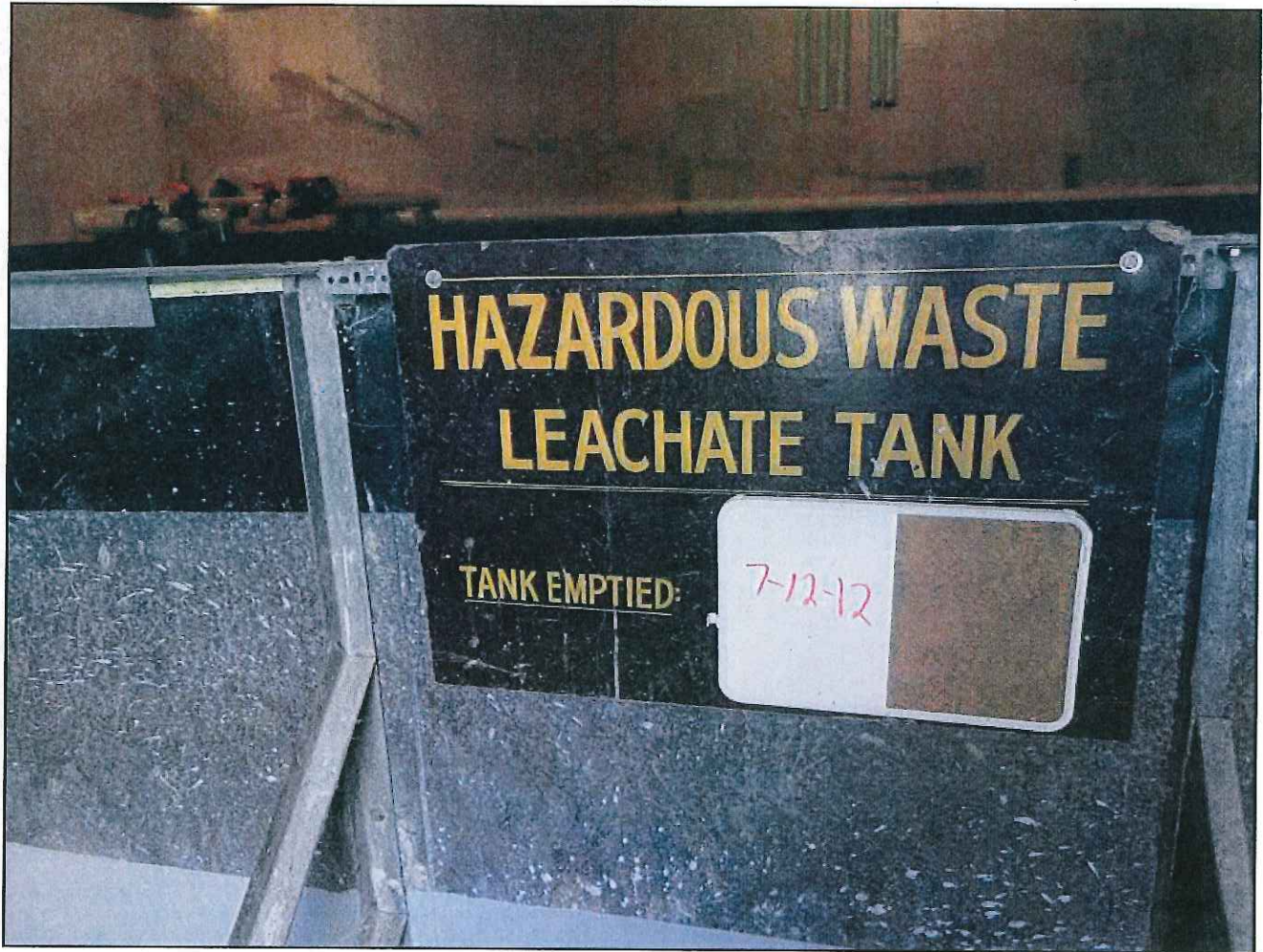
RIMG0036.JPG

Title:



Attributes

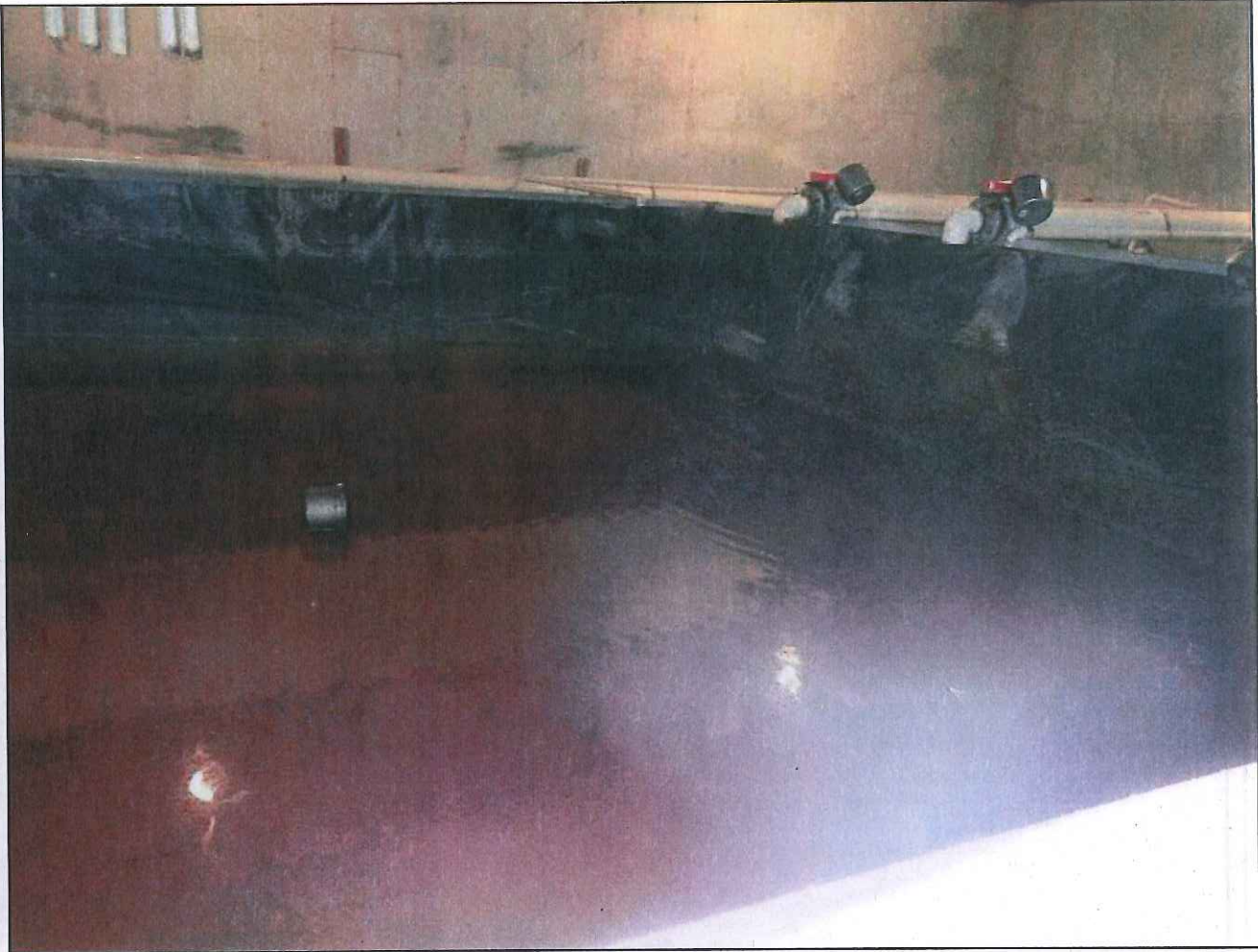
File Name	RIMG0036.JPG
Date Time Stamp	7/19/2012 3:57:35 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Leachate collection tank with inlet pipes from primary and secondary leachate system for landfill unit 1, phase 1.



Attributes	
File Name	RIMG0037.JPG
Date Time Stamp	7/19/2012 3:57:46 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Sign for the leachate collection tank area for landfill unit 1, phase 1 (less-than-90-day tank).

RIMG0038.JPG

Title:



Attributes	
File Name	RIMG0038.JPG
Date Time Stamp	7/19/2012 3:58:03 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of leachate collection tank for landfill unit 1, phase 1.

RIMG0039.JPG

Title:



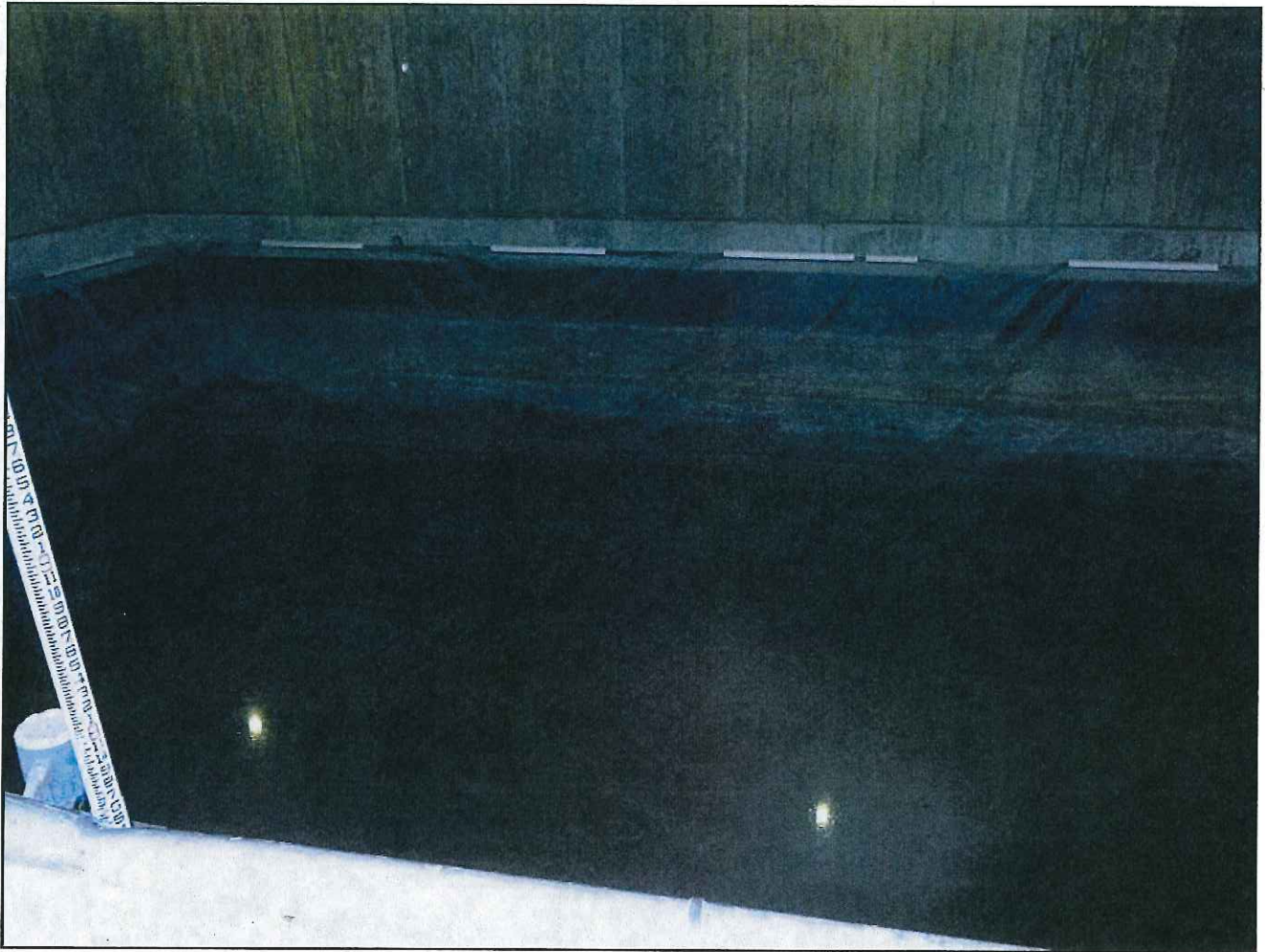
Attributes	
File Name	RIMG0039.JPG
Date Time Stamp	7/19/2012 3:58:10 PM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of leachate collection tank for landfill unit 1, phase 1. Inlet pipes from primary leachate from cells 3-6.



Attributes	
File Name	RIMG0040.JPG
Date Time Stamp	7/19/2012 4:06:54 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 33"
Longitude	W 86° 55' 21"
Photo Direction	212° SSW
Description:	Sign at less-than-90-day leachate collection tank for landfill unit 1, phase 2 (cells 11-13).

RIMG0041.JPG

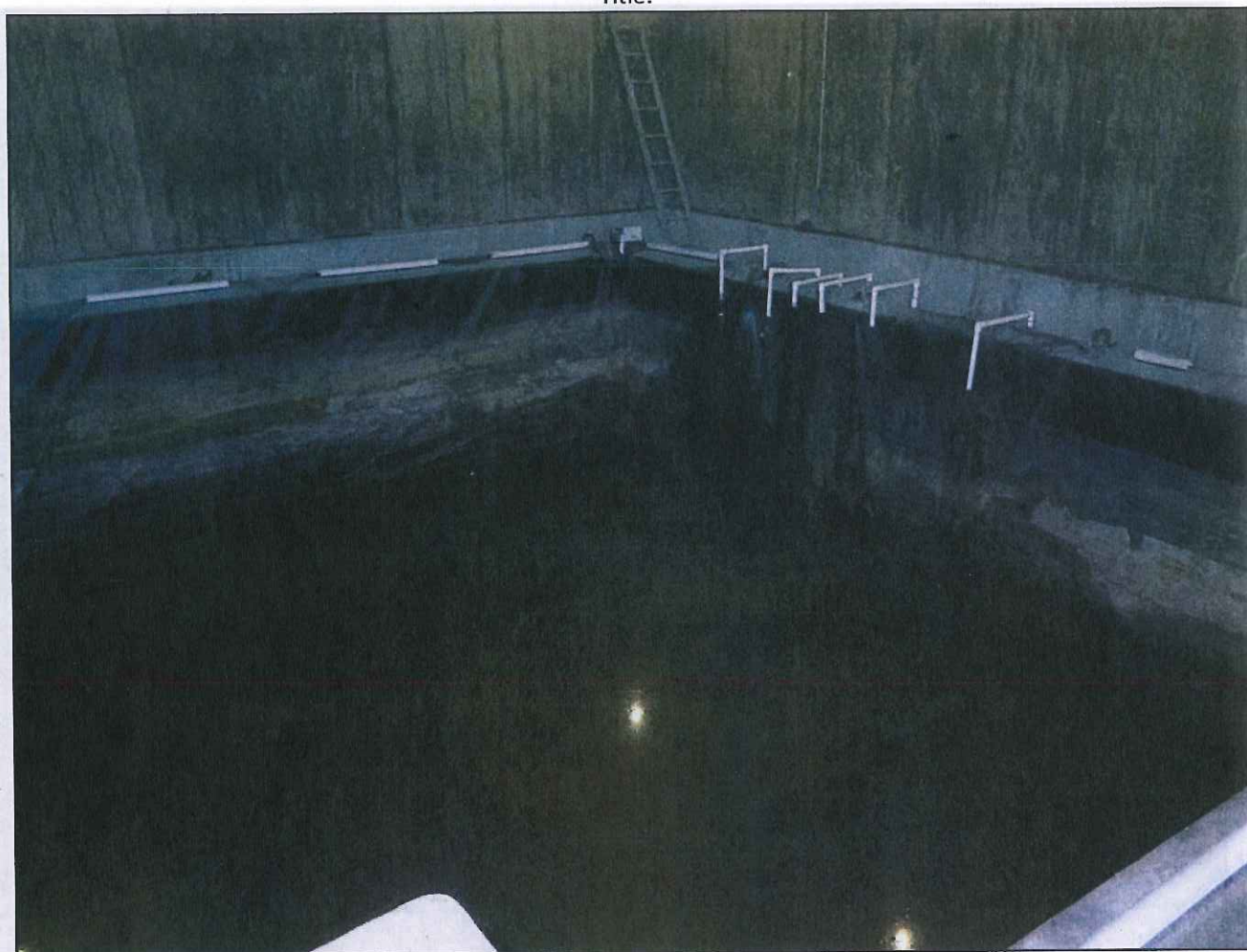
Title:



Attributes	
File Name	RIMG0041.JPG
Date Time Stamp	7/19/2012 4:07:01 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 33"
Longitude	W 86° 55' 21"
Photo Direction	215° SW
Description:	Overview shot inside of the leachate collection tank for landfill unit 1, phase 2.

RIMG0042.JPG

Title:



Attributes

File Name	RIMG0042.JPG
Date Time Stamp	7/19/2012 4:07:09 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 33"
Longitude	W 86° 55' 21"
Photo Direction	232° SW
Description:	Overview shot inside of the leachate collection tank for landfill unit 1, phase 2.

RIMG0043.JPG

Title:



Attributes	
File Name	RIMG0043.JPG
Date Time Stamp	7/19/2012 4:07:48 PM
Photographer:	A. Ruhs
Latitude	N 39° 50' 33"
Longitude	W 86° 55' 21"
Photo Direction	74° ENE
Description:	Inlet pipes and meters for the leachate gravity fed to the leachate collection tank for landfill unit 1, phase 2.

RIMG0044.JPG

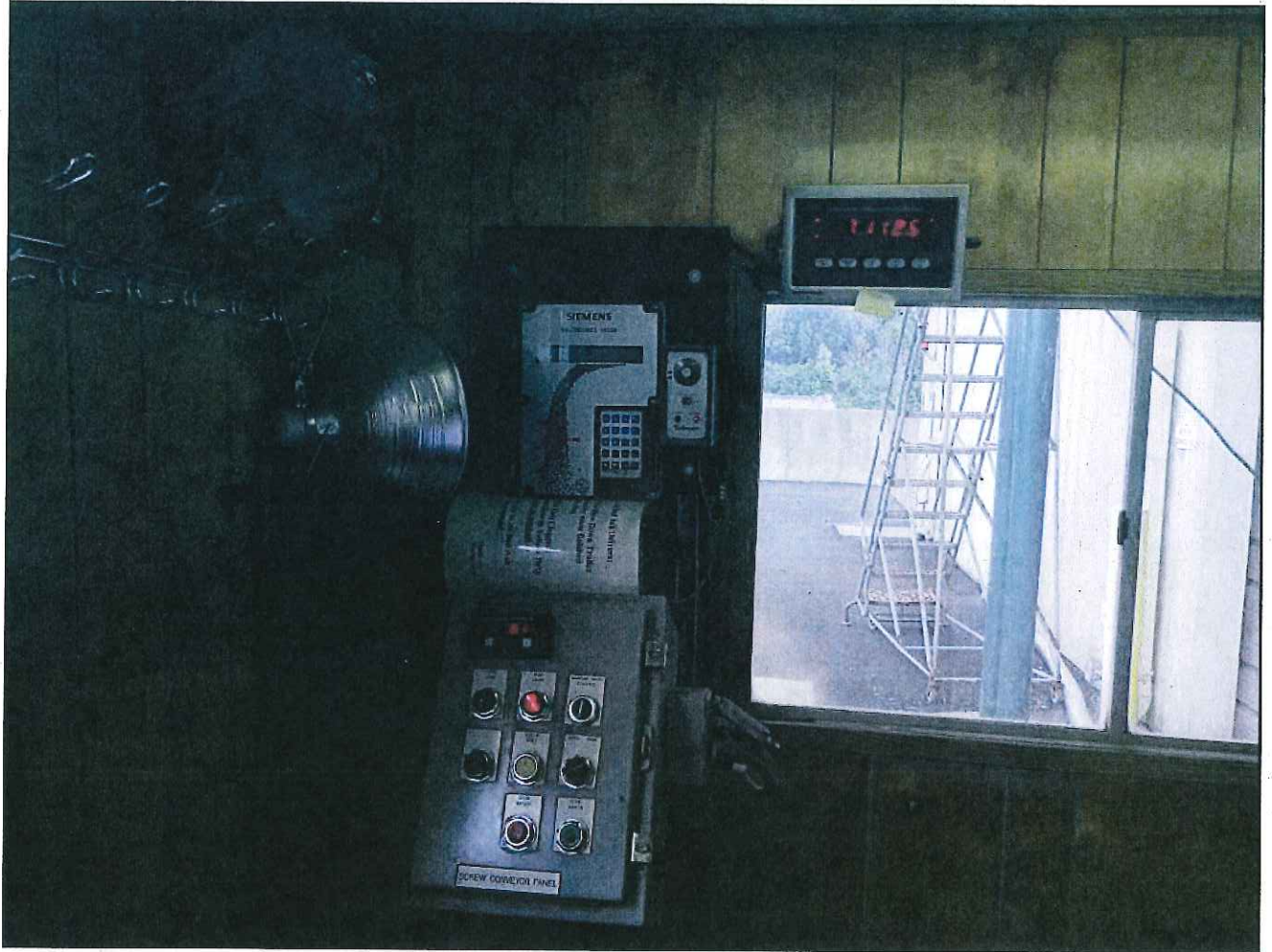
Title:



Attributes	
File Name	RIMG0044.JPG
Date Time Stamp	7/20/2012 9:51:06 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Bed Ash reagent silo stored behind the CB-W fixation building (silo #68).

RIMG0045.JPG

Title:



Attributes	
File Name	RIMG0045.JPG
Date Time Stamp	7/20/2012 10:05:54 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Bed ash feed control panel at the CB-W fixation building.



Attributes	
File Name	RIMG0046.JPG
Date Time Stamp	7/20/2012 10:24:45 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Overview shot of the CB-W fixation building.

RIMG0047.JPG

Title:



Attributes	
File Name	RIMG0047.JPG
Date Time Stamp	7/20/2012 10:38:48 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 53"
Longitude	W 86° 18' 02"
Photo Direction	244° WSW
Description:	Baghouse area for the CB-W fixation building.

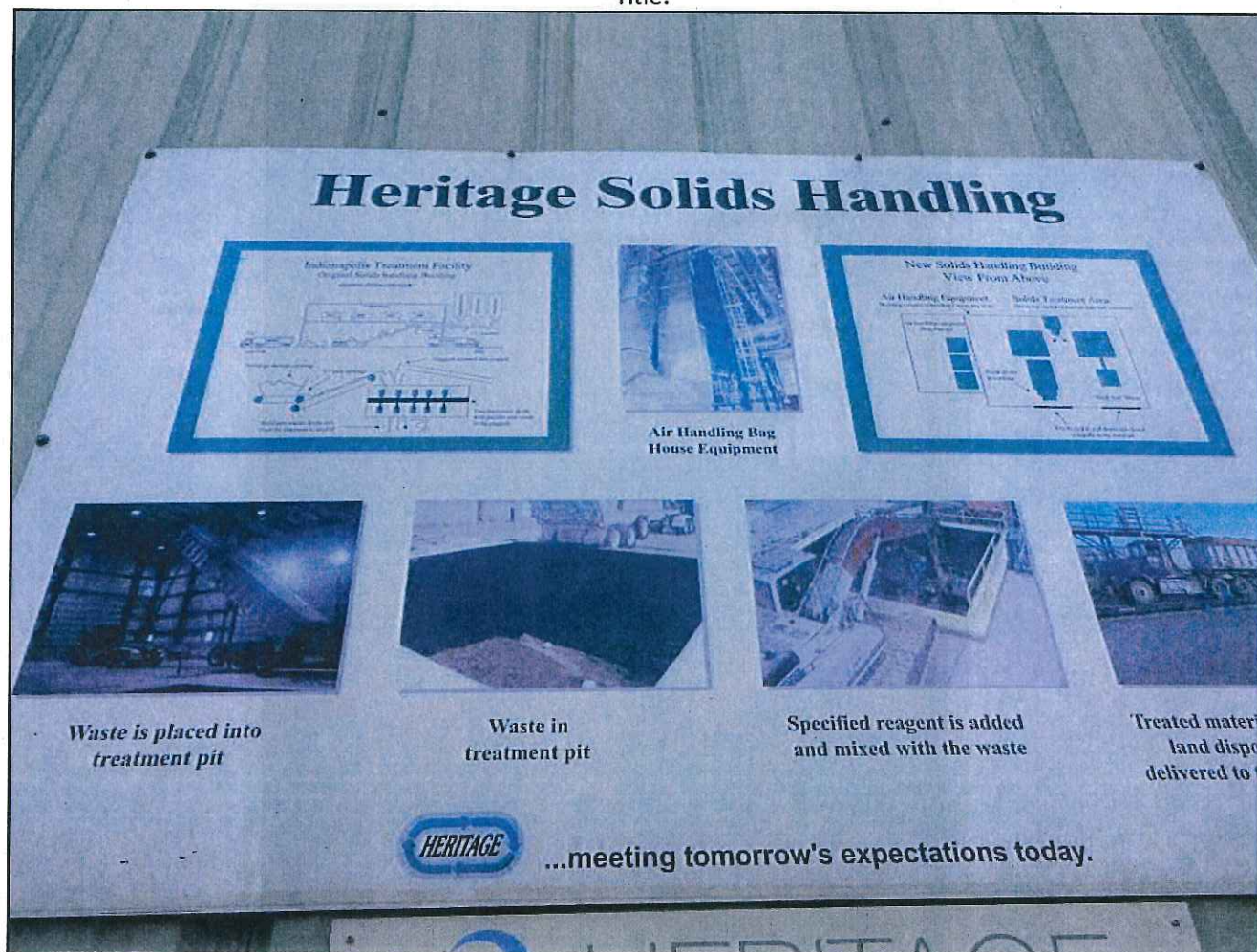
RIMG0048.JPG

Title:



Attributes	
File Name	RIMG0048.JPG
Date Time Stamp	7/20/2012 10:44:16 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	NaSH reagent tanks 80 and 81 at the CB-W fixation building.

Title:



Attributes	
File Name	RIMG0049.JPG
Date Time Stamp	7/20/2012 10:47:42 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Photo of CB-W fixation treatment building.

RIMG0050.JPG

Title:



Attributes	
File Name	RIMG0050.JPG
Date Time Stamp	7/20/2012 10:51:20 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

RIMG0051.JPG

Title:



Attributes	
File Name	RIMG0051.JPG
Date Time Stamp	7/20/2012 10:51:29 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

RIMG0052.JPG

Title:



Attributes	
File Name	RIMG0052.JPG
Date Time Stamp	7/20/2012 10:51:39 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

RIMG0053.JPG

Title:



Attributes	
File Name	RIMG0053.JPG
Date Time Stamp	7/20/2012 10:51:48 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

**Attributes**

File Name	RIMG0054.JPG
Date Time Stamp	7/20/2012 10:51:52 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

RIMG0055.JPG

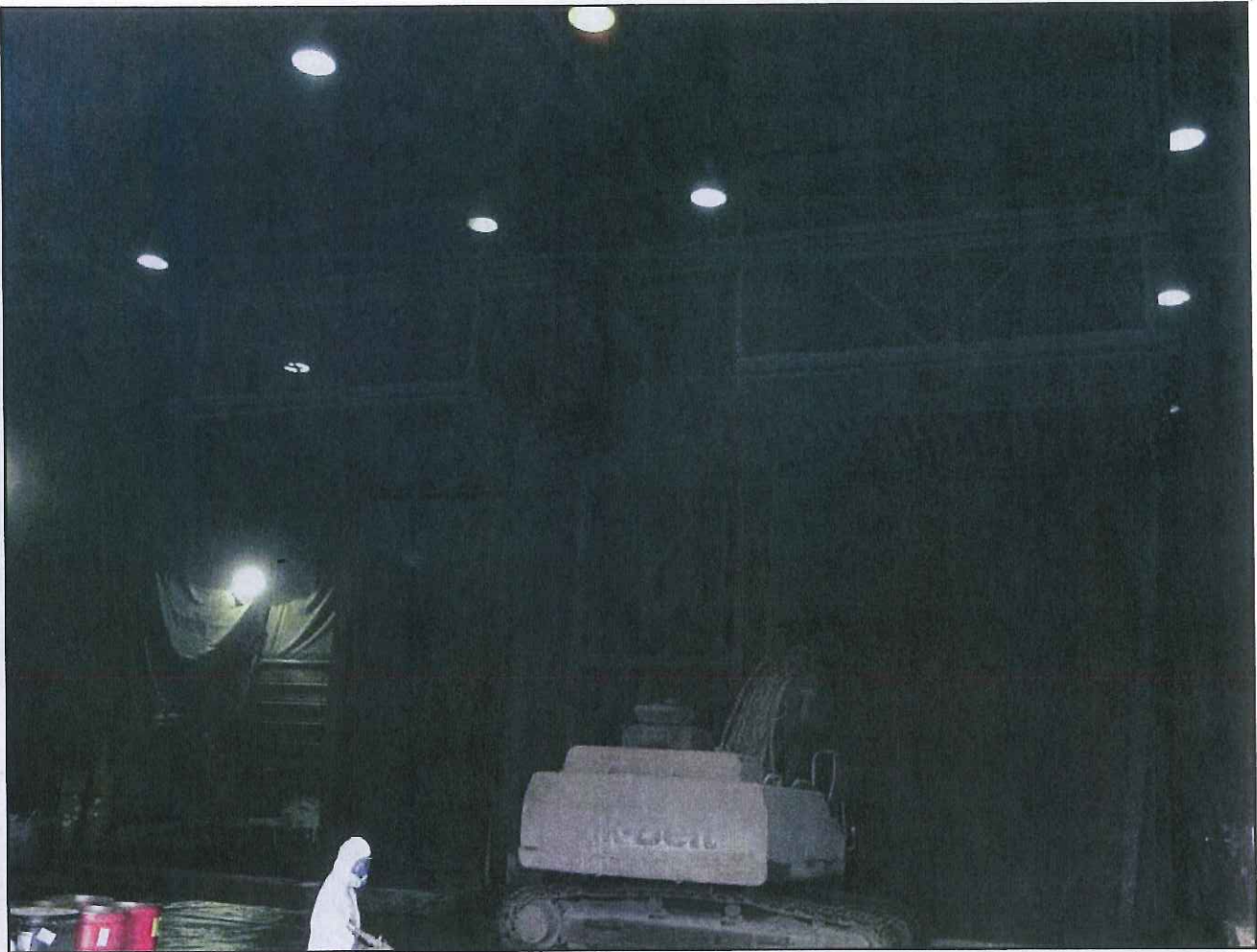
Title:



Attributes	
File Name	RIMG0055.JPG
Date Time Stamp	7/20/2012 10:51:58 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

RIMG0056.JPG

Title:



Attributes	
File Name	RIMG0056.JPG
Date Time Stamp	7/20/2012 10:52:30 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Inside of CB-W fixation building. Dump floor -1 (DF-1) treatment tank to the right, and DF-2 to the left.

RIMG0057.JPG

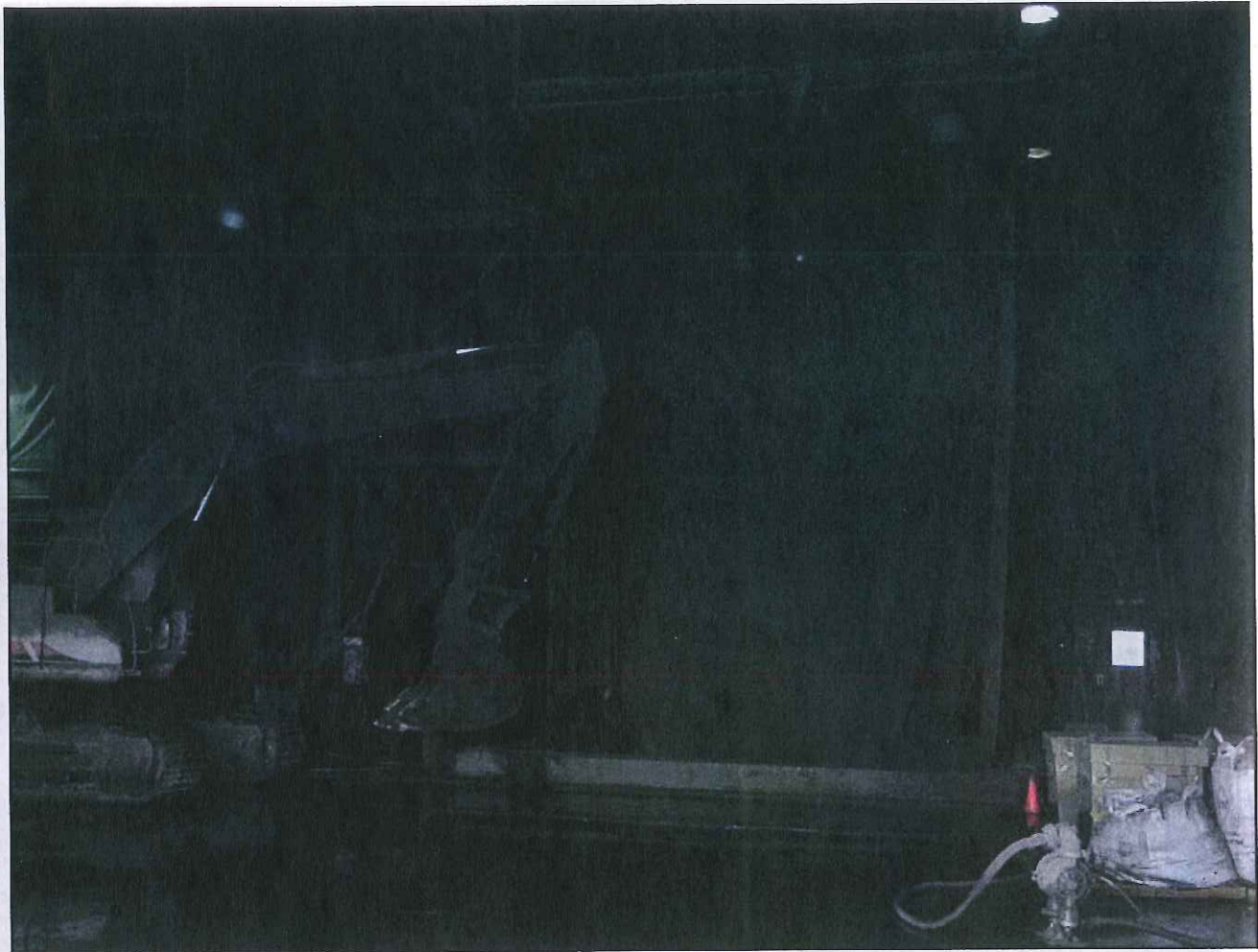
Title:



Attributes	
File Name	RIMG0057.JPG
Date Time Stamp	7/20/2012 10:54:56 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Close-up on DF-1.

RIMG0058.JPG

Title:



Attributes	
File Name	RIMG0058.JPG
Date Time Stamp	7/20/2012 10:55:13 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Close-up on DF-1.

RIMG0059.JPG

Title:



Attributes	
File Name	RIMG0059.JPG
Date Time Stamp	7/20/2012 10:55:32 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Close-up on DF-1.

RIMG0060.JPG

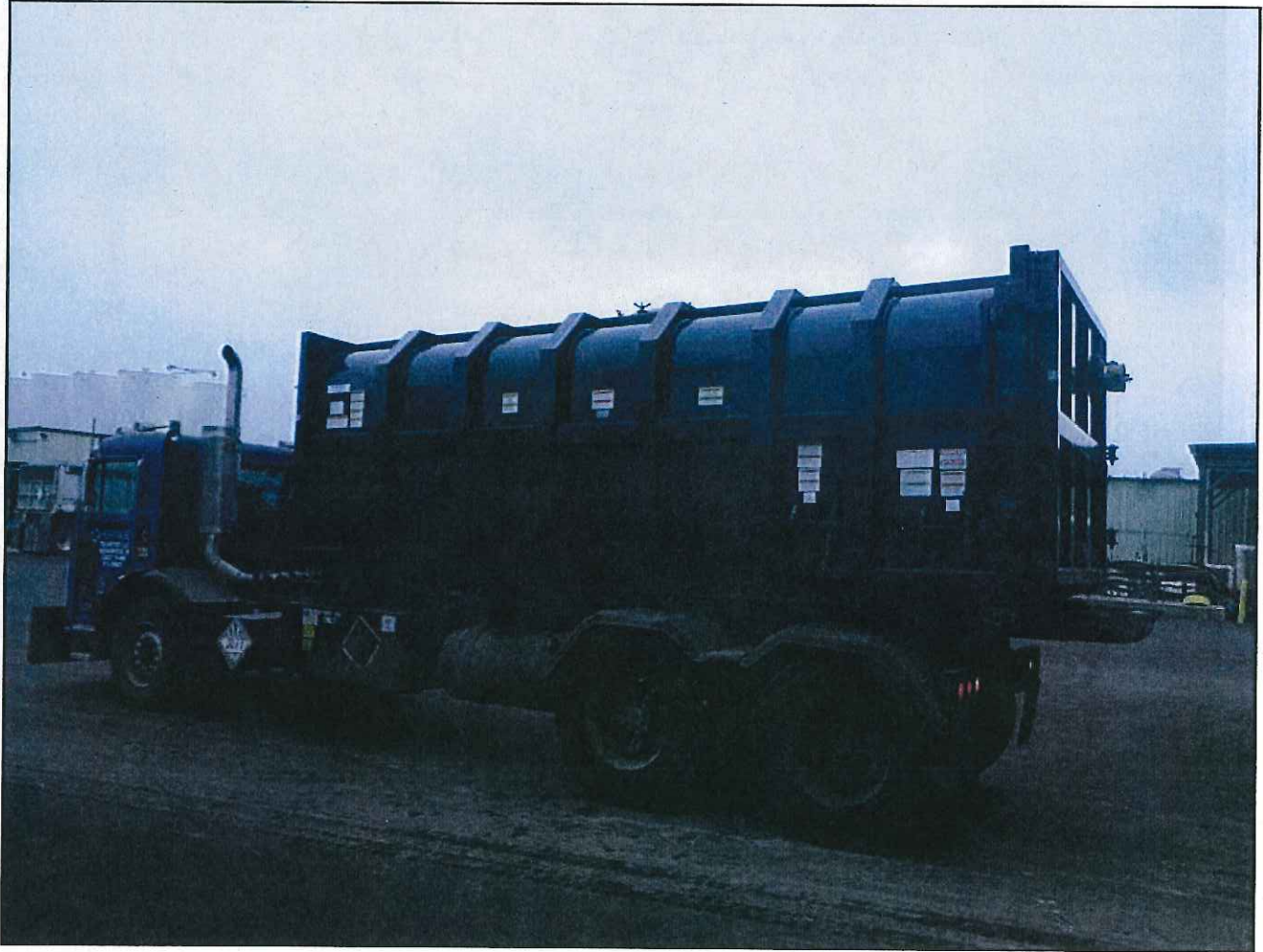
Title:



Attributes	
File Name	RIMG0060.JPG
Date Time Stamp	7/20/2012 10:55:45 AM
Photographer:	A. Ruhs
Latitude	
Longitude	
Photo Direction	
Description:	Close-up on DF-2.

RIMG0061.JPG

Title:



Attributes	
File Name	RIMG0061.JPG
Date Time Stamp	7/20/2012 10:58:21 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 58"
Longitude	W 86° 18' 02"
Photo Direction	68° ENE
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0062.JPG

Title:



Attributes	
File Name	RIMG0062.JPG
Date Time Stamp	7/20/2012 11:01:02 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	168° SSE
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0063.JPG

Title:



Attributes	
File Name	RIMG0063.JPG
Date Time Stamp	7/20/2012 11:03:08 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	164° SSE
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0064.JPG

Title:



Attributes

File Name	RIMG0064.JPG
Date Time Stamp	7/20/2012 11:03:13 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	168° SSE
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0065.JPG

Title:



Attributes	
File Name	RIMG0065.JPG
Date Time Stamp	7/20/2012 11:03:23 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	182° S
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0066.JPG

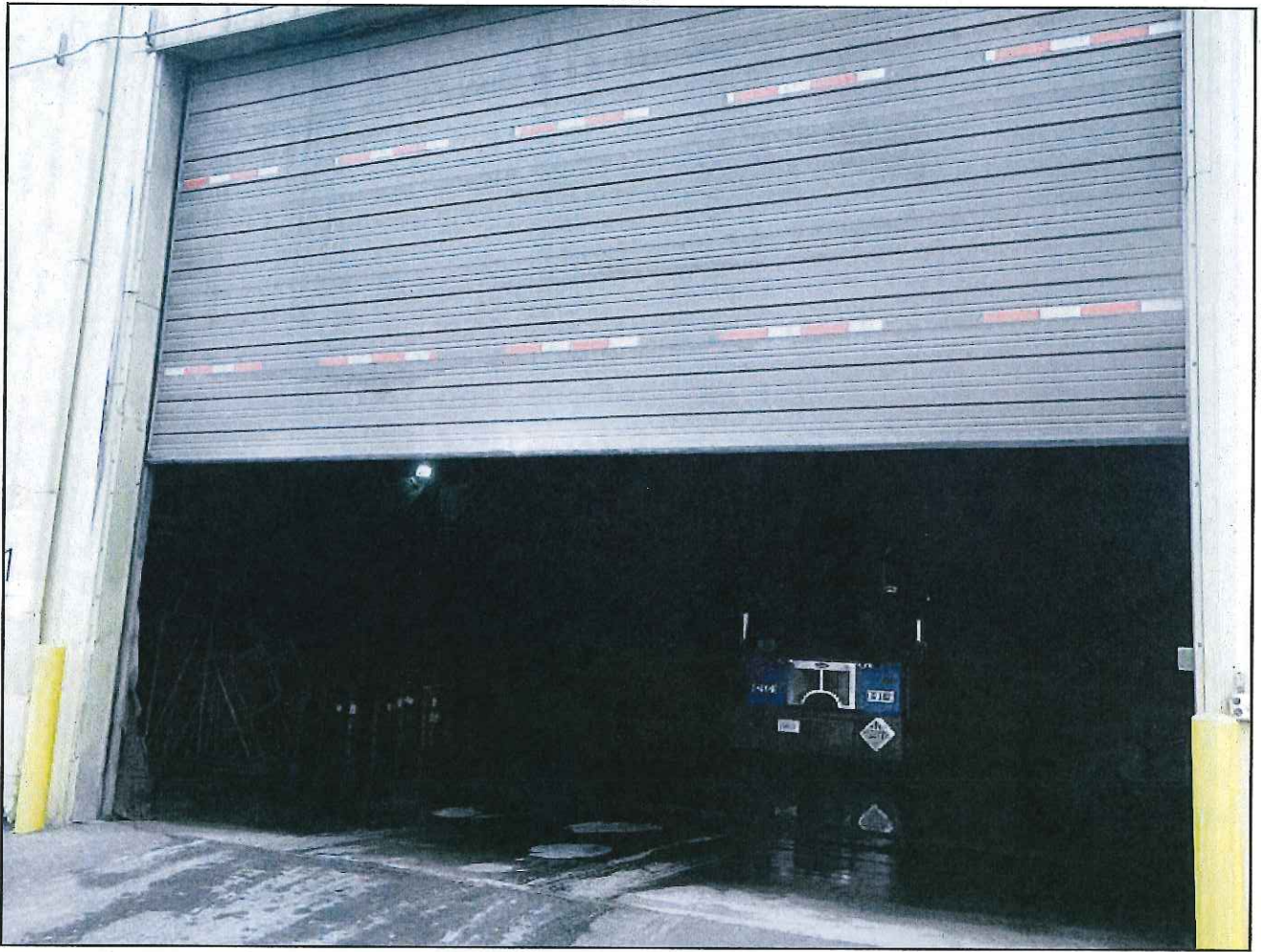
Title:



Attributes	
File Name	RIMG0066.JPG
Date Time Stamp	7/20/2012 11:03:36 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	189° S
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0067.JPG

Title:



Attributes	
File Name	RIMG0067.JPG
Date Time Stamp	7/20/2012 11:04:13 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	180° S
Description:	TOSCO waste truck waiting to unload at CB-W DF-1.

RIMG0068.JPG

Title:



Attributes	
File Name	RIMG0068.JPG
Date Time Stamp	7/20/2012 11:07:27 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 48"
Longitude	W 86° 18' 04"
Photo Direction	347° NNW
Description:	Mercury Processing building - overview shot.

RIMG0069.JPG

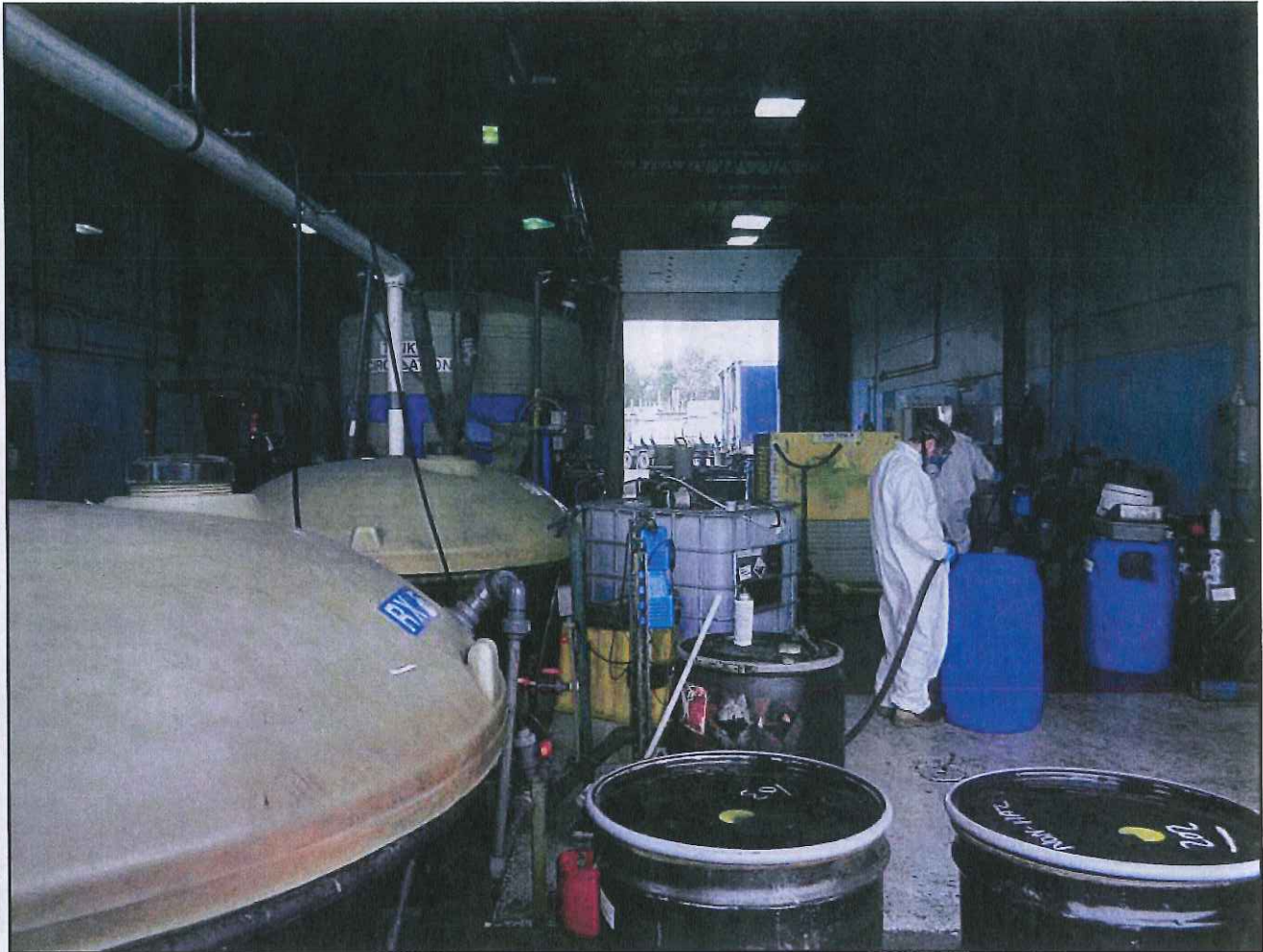
Title:



Attributes	
File Name	RIMG0069.JPG
Date Time Stamp	7/20/2012 11:07:53 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 49"
Longitude	W 86° 18' 04"
Photo Direction	15° NNE
Description:	Inside shot of the mercury processing area.

RIMG0070.JPG

Title:



Attributes	
File Name	RIMG0070.JPG
Date Time Stamp	7/20/2012 11:18:10 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 49"
Longitude	W 86° 18' 05"
Photo Direction	351° N
Description:	Inside shot of the mercury processing area.



Attributes

File Name	RIMG0071.JPG
Date Time Stamp	7/20/2012 11:20:21 AM
Photographer:	A. Ruhs
Latitude	N 39° 44' 49"
Longitude	W 86° 18' 04"
Photo Direction	43° NE
Description:	mercury vial crusher and washer at the mercury processing area. Blue drum collects the mercury and rinse water to process, and the black drum collects the vials.